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Please note that SANS 10400-F:1990, SANS 10400-N:1990 and SANS 10400-V:1990 have been superseded by SANS 10400-F:2010 (edition 3.0), SANS 10400-N:2010 (edition 3.0) and SANS 10400-V:2010 (edition 3.0) respectively. All other parts in this publication are still current. For more information, contact info@sabs.co.za or sales@sabs.co.za.

SOUTH AFRICAN STANDARD

Code of Practice for

The application of the National Building Regulations

The attention of all users of SANS 10400:1990 is drawn to the special note that appears on the inside cover page, as well as to the amendment to the National Building Regulations and Building Standards Act, 1977 (Act 103 of 1977), Notice No. R. 574, as published in Government Gazette No. 31084 of 30 May 2008, which has been inserted after p. 10 of the standard.

First Revision
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Gr 22



To users of SANS 10400 (SABS 0400) – *The application of the National Building regulations (NRB)*

The National Building Regulations were amended in October 2008, effectively making some of the deemed-to-satisfy provisions of the SANS 10400 incorrect.

As the National Technical Committee is still busy with the revision of the SANS 10400, to align its application with the amended regulations, users are hereby warned that compliance with the current SANS 10400 may not be deemed to be satisfying the NBR.

The South African Bureau of Standards hereby encourages the users of SANS 10400 to familiarize themselves with the amended National Building Regulations (attached for ease of reference), and to follow other means of satisfying the NBR, e.g. submission of a rational design, where ever the SANS 10400 falls short.

It is envisaged that the amended SANS 10400 will be published before the end of December 2009, and until such time, the draft standard is available to members of the public from our sales office.

WARNING: THE DRAFT MAY CHANGE AT ANY TIME BEFORE PUBLICATION.

For any clarity, please feel free to contact us.

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SOUTH AFRICAN BUREAU OF STANDARDS
CODE OF PRACTICE
for
THE APPLICATION OF THE NATIONAL BUILDING REGULATIONS

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The South African Bureau of Standards wishes to acknowledge the valuable assistance of the National Building Regulations Technical Advisory Committee.

NOTICE

This code of practice was approved by the Council of the South African Bureau of Standards on 23 August 1990.

In terms of regulations promulgated under the Standards Act, 1982 (Act 30 of 1982), it is a punishable offence for any person to falsely claim compliance with the provisions of a code of practice published by the South African Bureau of Standards.

Authorities who wish to incorporate this code of practice into legislation in the manner intended by section 33 of the Act should consult the South African Bureau of Standards regarding the implications concerned. The code includes provisions intended for information and guidance only. These provisions may not be suitable for direct incorporation.

This code of practice will be revised and republished in September 1995 in order to keep abreast of progress. Comment received before March 1994 will be considered when the code is revised.

The National Building Regulations contained in this code have been reproduced under Government Printers Copyright Authority No. 8743 of 8 September 1987.

First Revision August 1990
This code of practice supersedes SABS 0400-1987

PREFACE

Development in the building industry is a continuous process. With passage of time new materials become available, design methods are refined and innovative building systems are introduced. It is therefore obvious that building regulations cannot remain static if they are to allow for the early use of these developments and the eventual acceptance of satisfactory systems as conventional building methods.

The National Building Regulations differ considerably in appearance and content from previous building bylaws but this does not mean that the buildings constructed in accordance with these regulations need differ to any great extent from those built in the recent past. It is true that the regulations have been written in their present form in order to encourage the use of innovative design, new materials and new construction methods where these can be shown to be suitable. However, it is equally true that any building designed in accordance with accepted methods and constructed of conventional materials in accordance with the principles of good building practice should, in general, comply with the new regulations.

The National Building Regulations do not purport, and were never intended, to be a handbook on good building practice. They set out, in the simplest and shortest way possible, requirements to ensure that buildings will be designed and built in such a way that persons may live and work in a healthy and safe environment. There are other aspects to a building which may affect only the comfort or convenience of people but many of these, such as acoustic or thermal performance, are judged in a subjective way and are not readily amenable to control in a sensible manner by regulation. It is also obvious that the market will limit the degree to which these matters can be considered in the design of a building. It is important, therefore, that entrepreneurs, designers and building owners should be aware that the mere fact that a building complies with the National Building Regulations will not automatically indicate that it is a desirable building.

There are many aspects to be considered and the relative economic worth of each must be related to the final cost of the building. Professional designers are trained to take these matters into account and can be expected to do so without any obstructive and possibly useless control by regulation. In the case where the designer of a building is not professionally qualified, there is a wealth of information on good building practice available in textbooks and from organizations such as the CSIR and the South African Bureau of Standards.

As a guide to the understanding and correct interpretation of the National Building Regulations it is important to know the thoughts, philosophy and intent behind the regulations. Because these regulations were originally introduced as a long-term anti-inflationary measure it is obvious that they should not increase the overall cost of building. Another aim was to reduce the number of regulations to a minimum. It was therefore decided that as far as possible, regulations be concerned only with the health and safety of persons in a building, that all technical aspects be covered by functional regulations and that the regulations be written in such a way that they would assist rather than impede the use of innovative building systems and designs. This should be kept in mind by any local authority when assessing a building in terms of the functional regulations.

In applying the National Building Regulations it will be found that in certain instances there is an overlap with the requirements of regulations made in terms of other Acts or Provincial Ordinances. Some of these anomalies may be overcome in the future by suitable amendments to other regulations but there are some regulations made in terms of local town planning schemes that it may be desirable to retain. In particular, this would refer to requirements for building lines and for materials which are permitted as exterior finishing for buildings. The requirements in the National Building Regulations are there for technical reasons but what is technically acceptable may not be acceptable for other reasons.

This code sets out prescriptive provisions that are deemed to satisfy the technical aspects of the National Building Regulations and, where considered necessary, these provisions have been amplified by illustrations and commentary. The commentary, although not an essential part of the code, has been introduced in the interests of promoting better understanding of the National Building Regulations and the form in which they are drafted but it must be clearly understood that anything contained in the commentary has no force whatever in law.

Although the "deemed-to-satisfy" rules are based on the work of the Technical Advisory Committee that was appointed by the SABS to advise on the treatment of the comments on the first edition of the National Building Regulations, this code, because of its specialist nature, has not been prepared with the help of a committee as is usual SABS practice. Any opinions expressed herein are those of the authors and relate solely to the intent of the regulations and "deemed-to-satisfy" rules or the technical contents thereof. There has been no attempt to express any legal opinions as any definitive legal opinion can only be the outcome of a decided case in law. Any queries in regard to the contents of this code or of the National Building Regulations may be addressed to the Building Science and Regulations Division of the South African Bureau of Standards.

In order to ensure that the National Building Regulations will remain valid and up-to-date, both the regulations and this code will be reviewed and any necessary revision will be published in September 1995. It is envisaged that thereafter, revised versions of the code and, if necessary, the regulations will be published at 5 yearly intervals.

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**DEPARTMENT OF TRADE AND INDUSTRY
DEPARTEMENT VAN HANDEL EN NYWERHEID**

No. R. 574

30 May 2008

**NATIONAL BUILDING REGULATIONS AND BUILDING STANDARDS ACT, 1977
(ACT 103 OF 1977)**

NATIONAL BUILDING REGULATIONS

I, Mandisi Mpahlwa, Minister of Trade and Industry, hereby under Section 17(3) of the National Building Regulations and Building Standards Act (Act No. 103 of 1977), and on the recommendation of the Council of the South African Bureau of Standards, declare the regulations, as set out in the Schedule, to come into operation on the 1 October 2008.



M Mpahlwa

Minister of Trade and Industry

SCHEDULE

Substitution of Regulation AZ.1

- 1 Regulation AZ1 of the Regulations is substituted for the following regulation:

These amended regulations shall in terms of section 17(3) of the Act come into operation on 1 October 2008.

Amendment of Regulation AZ.2

Regulation AZ2 of the Regulations is amended as follows:

- 2 Delete "suitable" in heading for definition for "acceptable", "adequate", "satisfactory" or "suitable" and in the text of the definition itself

- 3 Add the following new definition:

"action" means an assembly of concentrated or distributed mechanical forces acting on a building or the cause of deformations imposed on the building or constrained in it

- 4 Add the following new definition:

"Agrément certificate" means a certificate that confirms fitness-for-purpose of a non-standardised product, material or component or the acceptability of the related non-standardised design and the conditions pertaining thereto (or both) issued by the Board of Agrément South Africa."

- 5 Add the following new definition:

Board of Agrément South Africa

the body that operates under the delegation of authority of the Minister of Public Works.

- 6 Delete definition for "class"

- 7 Substitute "competent person" with the following:

means a person who is qualified by virtue of his education, training, experience and contextual knowledge to make a determination regarding the performance of a building or part thereof in relation to a functional regulation or to undertake such duties as may be assigned to him in terms of these regulations .

- 8 Add the following new definition

"contaminated land" means any land that, due to substances contained within or under it, is in a condition that presents an unacceptable risk to the health and safety of occupants of buildings constructed on such land.

- 9 Add the following new definition:

"deemed-to-satisfy provision" means non-mandatory requirement, the compliance with which ensures compliance with a functional regulation

- 10 Add the following new definition:

"dolomite land" means land underlain by dolomite or limestone rock directly or at a shallow depth less than:

- (a) 60 m in areas underlain by limestone;
- (b) 60 m in areas underlain by dolomite where no de-watering has taken place and the local authority has jurisdiction, is monitoring and has control over the groundwater levels over the areas under consideration; or
- (c) 100 m in areas underlain by dolomite where de-watering has taken place or where the local authority has no jurisdiction or control over ground water levels.

- 11 Substitute "SANS 10177-2" for "SABS 0177 Part II" in definition for **"fire resistance"**

- 12 Add the following new definition:

"functional regulation" means a regulation that sets out in qualitative terms what is required of a building or building element or building component in respect of a particular characteristic without specifying the method of construction, dimensions or material to be used

- 13 Add the following new definition:

geotechnical site investigation

the process of evaluating the geotechnical character of a site in the context of existing or proposed works or land usage, which may include one or more of the following:

- (a) evaluation of the geology and hydrogeology of the site;
- (b) examination of existing geotechnical information pertaining to the site;
- (c) excavating or boring in soil or rock and the systematic description of the soil and rock profiles;
- (d) determining the depth of any fill that might be present;
- (e) in-situ assessment of geotechnical properties of materials;
- (f) recovery of samples of soil or rock for examination, identification, recording, testing or display;
- (g) testing of soil or rock samples to quantify properties relevant to the purpose of the investigation;
- (h) evaluation of geotechnical properties of tested soils; and
- (i) reporting the results.

- 14 Delete definition for **"incremental house"**

- 15 Insert "waste water" before "or stormwater" at the end of the definition for "industrial effluent"

- 16 Add the following new definition:

"inspection" means the general inspection by a competent person of a system or measure or installation of a building, or part thereof, at such intervals as might be necessary in accordance with accepted professional practice to enable such competent person to be satisfied that the design assumptions are valid, the design is being correctly interpreted and the work is being executed generally in accordance with the designs, appropriate construction techniques and good practice but shall exclude detailed supervision and day-to-day inspection.

- 17 Substitute "load" with the following:

"load" means the value of a force corresponding to an action.

- 18 Substitute (a) ix) in "**minor building work**" with the following:
- (ix) any free-standing wall constructed of masonry, concrete, steel, aluminium or timber or any wire fence where such wall or fence does not exceed 1,8 m in height at any point above ground level and does not retain soil;
- 19 Substitute "SANS 10177-5" for "SABS 0177-V" in definition for "**non-combustible**"
- 20 Delete definition for "**pail closet**"
- 21 Add the following new definition:
- "**persons with disabilities**" means those persons who have long-term physical, mental, intellectual or sensory impairments which in interaction with various barriers might hinder their full and effective participation in society on an equal basis with others."
- 22 Delete definition for "**pit latrine**"
- 23 Add the following new definition:
- "**prescriptive regulation**" means a regulation which describes in some detail an operation to be performed, or the dimensions of a building, building element or building component and the materials and method of construction to be used in such building, building element or building component
- 24 Add the following new definition:
- "**rational assessment**" means assessment by a competent person of the adequacy of the performance of a solution in relation to requirements including, as necessary, a process of reasoning, calculation and consideration of accepted analytical principles, based on a combination of deductions from available information, research and data, appropriate testing and service experience;
- 25 Substitute "**rational design**" with the following:
- "**rational design**" means any design by a competent person involving a process of reasoning and calculation and which may include a design based on a standard or other suitable document
- 26 Delete definition for "**roof assembly**"
- 27 Delete definition for "**sanitary group**"
- 28 Substitute "WC" in the definition for "**storage tank**" with "toilet"
- 29 Delete "mezzanine floor" in definition for "**storey**"
- 30 Delete definition for "**street boundary**"
- 31 Add the following new definition:
- "**suitable**" means capable of fulfilling or having fulfilled the intended function or fit for its intended purpose
- 32 Add to the end of the definition for "**trained plumber**" the words "or has obtained a National Certificate in Construction Plumbing, National Qualification Framework level 3".

Substitution of Regulation AZ.3

- 33 Regulation AZ.3 of the Regulations is substituted with the following regulation:
Where in these regulations reference is made to a SANS number, such reference shall relate to the latest edition of the national standard having the number and title given in the following table:

1	2
SANS No.	Title
1125	Room air conditioners and heat pumps
10005	The preservative treatment of timber
10082	Timber frame buildings .
10105	The use and control of fire fighting equipment
10124	The application of soil insecticides for the protection of buildings
10177	Fire testing of materials, components, and elements used in buildings Part I Part 2 Part 3. Part 4
10400	The application of the National Building Regulations

Addition of Regulation AZ.4

- 34 Add the following Regulation AZ.4

AZ.4 Complying with the requirements of the National Building Regulations

- (1) The requirements of the National Building Regulations shall be complied with by:
- (a) adhering to the requirements of all the prescriptive regulations; and
 - (b) satisfying all functional regulations by:
 - (i) adopting building solutions that comply with the requirements of the relevant part of SANS 10400; or
 - (ii) reliably demonstrating, or predicting 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.
- (2) A competent person who is registered in an appropriate category of registration in terms of the Architectural Professions Act, 2000 (Act No 44 of 2000), the Engineering Profession Act, 2000 (Act No 46 of 2000), the Natural Scientific Professions Act, 2003 (Act No. 27 of 2003) or any other relevant Act and, in accordance with the requirements of Regulation A19, shall prepare and submit to the local authority a rational design or rational assessment where compliance with the requirements of sub-regulation (1) is to be satisfied in terms of sub-regulation (1)(b)(ii).
- (3) An approved competent persons who satisfies the requirements of sub-regulation (1) in terms of sub-regulation (1)(b)(ii) in respect of a system, measure, facility, parameter or installations shall inspect and certify upon completion, in accordance with the requirements of Regulation A19, the construction, erection or installation thereof.

Amendment of Regulation A1

Regulation A1 of the Regulations is amended as follows:

35 Substitute sub-regulation **A1(1)** with the following:

- (1) The designing, planning and the supervision of the erection of any building or structure or the performance of any function in connection therewith in terms of these regulations is subject to the provisions of any law in terms of which the person undertaking such work or performing such function is required to be registered in terms of the Architectural Profession Act, 2000 (Act No 44 of 2000), Engineering Profession Act, 2000 (Act No 46 of 2000), Natural Scientific Professions Act, 2003 (Act No. 27 of 2003), or Professional and Technical Surveyors' Act. 1984 (Act No 40 of 1984) , or any other relevant Act

36 Substitute sub-regulation **A1(3)** with the following:

- (3) (a) No person shall erect any building which is to be structurally supported by an existing building or extend an existing building unless an approved competent person has judged the existing building to be capable of carrying any additional load arising from such erection or extension and has, in writing, so informed the local authority.
- (b) Such notification shall accompany the application for approval of the erection of the building in terms of Section 4 of the Act.
- (c) For the purposes of this regulation "existing building" shall include a partly erected building.
- (d) Any structural support provided by the existing building shall be deemed to be part of the structural system of the building to be erected.
- (e) The local authority may require that the above notification be accompanied by a documented rational assessment of the adequacy of the structural support."

37 Delete sub-regulation **A1(7)(c)** and renumber sub-regulation **A1(7)(d)** as **A1(7)(c)**

Amendment of Regulation A2

Regulation A2 of the Regulations is amended as follows:

38 Substitute sub-regulation **A2(1)(f)(iv)** with the following:

- (iv) any certificate contemplated in these regulations, including any applicable Agrément Certificate;

39 Substitute sub-regulation **A2(1)(f)(v)** with the following:

- (v) particulars required in terms of any applicable legislation, by-laws, or part of SANS 10400

40 Add sub-regulation **A2(1)(g)**

- (g) a declaration by a person registered in a professional category of registration in terms of the one of the councils for the professions identified in the Council for the Built Environment Act, 2000 (Act No 43 of 2000) in the relevant portion of Form 1 contained in SANS 10400-A as to how the applicable functional regulations shall be satisfied

- 41 Add sub-regulations **A2(2)**, **A2(3)** and **A2(4)** and renumber sub-regulations **A2(2)** and **A2(3)** as **A2(5)** and **A2(6)**
- (2) The owner of a building shall appoint and retain the services of the person responsible for submitting the declaration required in sub-regulation (1)(g) and shall advise such person after such declaration has been submitted to the local authority of any changes made in the manner in which any functional regulation shall be satisfied or if the services of the competent person is for whatever reason terminated prior to the conclusion of his obligations in terms of these Regulations, or the appointment of any other competent person. Such person shall within one month of being notified by the owner or becoming aware of any change submit an amended declaration to the local authority.
 - (3) Where it is not possible for the person appointed by the owner of a building in sub-regulation (2) to fulfil his or her duties, the owner of such building shall appoint and retain another suitably qualified person to take over and perform the duties and responsibilities assigned to such person in sub-regulation (2)
 - (4) The names of all approved competent persons shall be entered into the appropriate schedule of Form 1 contained in SANS 10400-A before local authority approval may be granted.
- 42 Substitute sub-regulation **A(2)(6)** with:
- (6) (a) Where design work for the proposed erection of any building was commenced before the date of coming into effect of any amendment to these regulations or within 6 months of the publication of an edition of any part of SANS 10400 or a by-law and an application in respect of such erection has not been made prior to such date, the owner of the building, or a person authorized by the owner, may notify the local authority that such design work was so commenced and has so progressed.
 - (b) Subject to the provisions of this subregulation, an application in respect of an erection which has been the subject of a notification contemplated in paragraph (a) shall if so requested by the owner be dealt with by the local authority in accordance with the provisions of the building regulations, by-laws or edition of SANS 10400 in force immediately before such date.
 - (c) Any notification contemplated in paragraph (a) shall -
 - (i) be submitted by registered post within 6 months of the coming into effect of any new regulation, by-law or publication of a new edition of any part of SANS 10400; and
 - (ii) contain the name and address of the owner, the address of the site of the building concerned, the date of commencement of such design work and a description of the proposed erection and its intended use.
 - (d) The local authority shall, in writing, inform the owner concerned of acceptance of such notification.
 - (e) The provisions of paragraph (b) shall not apply in respect of any application which is made to the local authority more than 12 months after the date that the local authority informs the owner that it is so satisfied: Provided that the local authority may extend such period if it thinks it reasonable or necessary.
 - (f) Any person who gives false or misleading information in a notification in terms of this subregulation shall be guilty of an offence and such notification is null and void.

Amendment of Regulation A4

Regulation A4 of the Regulations is amended as follows:

- 43 Substitute "a professional engineer or other" with "an" in sub-regulation **A4(1)(b)**
- 44 Substitute "code of practice" with "standard" in Regulation **A4(1) (h), (i), (j) and (k)**
- 45 Substitute "forces" with "actions" in sub-regulation **A4(4)(d)** wherever it occurs
- 46 Substitute "grade" with "class" in sub-regulation **A4(5)(a)**
- 47 Substitute "SABS" with "SANS" in sub-regulation **A4(8)(a)**
- 48 Substitute "a professional engineer or other" with "an" in sub-regulation **A4(8)(b)**
- 49 Insert "Agrément " before certificate and delete "issued by the Agrément Board of South Africa" in sub-regulation **A4(9)(ii)**

Amendment of Regulation A5

Regulation A5 of the Regulations is amended as follows:

- 50 Substitute sub-regulation **A5(2)(b)** with the following:
 - (b) be drawn on any suitable material or be provided in a medium acceptable to the local authority;
- 51 Delete "paper " in sub-regulation **A5(3)**
- 52 Substitute "1:300" with "1:250" in sub-regulation **A(5)(5)(a)(i)**
- 53 Substitute sub-regulation **A5(5)(b)** with the following:
 - (b) The local authority may accept a scale not provided for in this sub-regulation.
- 54 Substitute sub-regulations **A8(6)** and **A8(7)** with the following:
 - (6) One copy of the plans and drawings contemplated in subregulation (2) shall, for the convenience of the local authority, identify in a suitable manner or colour the following as indicated below:

(a) Material	Colour (in plan or section)
(i) New masonry	Red
(ii) New concrete	Green
(iii) New iron or steel	Blue
(iv) New wood	Yellow
(v) New glass	Black
(vi) Existing materials (all materials)	Grey
(vii) All other new materials	To be clearly indicated in colours other than the above

(b)	Site plans	Colour
(i)	Proposed work	Red
(ii)	Existing work	Not coloured
(iii)	Work to be demolished	Drawn with black dotted lines
(c)	Drainage installation contemplated in regulation A2(1)(d)	Colour
(i)	Drains and soil pipes	Brown
(ii)	Waste pipes	Green
(iii)	Soil and combined vents	Red
(iv)	Waste vents	Blue
(v)	Pipes for the conveyance of industrial effluent	Orange
(vi)	Existing drains	Black
(vii)	Stormwater drains	Not coloured

55 Renumber sub-regulations **A5(8)** and **A5(9)** as **A5(7)** and **A5(8)**

56 Substitute "2 mm" with "2,5mm" in sub-regulation **A5(8)**

Amendment of Regulation A7

Regulation **A7** of the Regulations is amended as follows:

57 Add the following sub-regulation **A7(1)(e)** and renumber sub-regulations **A7(1)(e)** to **A7(1)h** as **A7(1)f** to **A7(1)(i)**

(e) all details relating to the facilities provided for persons with disabilities

Amendment of Regulation A8

Regulation **A8** of the Regulations is amended as follows:

58 Add "Two way vent valve2WV" to list in sub-regulation **A8(5)**

59 Substitute "WC" in sub-regulation **A8(5)** with "toilet" wherever it occurs

Amendment of Regulation A9

Regulation **A9** of the Regulations is amended as follows:

60 Add "protection" before "fire" in sub-regulation **A9(1)**

Amendment of Regulation A10

Regulation **A10** of the Regulations is amended as follows:

61 Add the following symbols to the list in sub-regulation **A10**:

Escape doorED
 Escape route.....ER
 Feeder routeFR

Amendment of Regulation A11

Regulation A11 of the Regulations is amended as follows:

- 62 Delete " before granting approval in relation to an application" in sub-regulation A11(1)

Amendment of Regulation A13

Regulation A13 of the Regulations is amended as follows:

- 63 Substitute sub-regulation A13(1) with the following:
- (1) (a) Material used in the erection of a building shall be suitable for the purpose for which it is to be used.
 - (b) All timber used in the erection of a building shall be treated against termite and wood borer attack and fungal decay in accordance with the requirements of SANS 10005 and shall bear the product certification mark of a body certified by the South African National Accreditation Systems.
 - (c) The requirements of subregulation (1)(a) shall be deemed to be satisfied if such material complies with and is incorporated into buildings in accordance with the requirements of SANS 10400,

Amendment of Regulation A14

Regulation A14 of the Regulations is amended as follows:

- 64 Substitute regulations A14(1) to A14(4) with the following and renumber sub-regulation A14(5) as A14(2):
- (1) (a) The construction of any building or element shall 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.
 - (2) (b) The requirements of sub-regulation (1)(a) shall be deemed to be satisfied if such construction satisfies the requirements of SANS 10400.

Amendment of Regulation A15

Regulation A15 of the Regulations is amended as follows:

- 65 Substitute title of Regulation A15 and sub-regulations A15(1) and A15(2) with the following:

A15 MAINTENANCE AND OPERATION

- (1) (a) The owner of any building shall ensure that any mechanical equipment, facility or any service installation provided in or in connection with such building, pursuant to these regulations or pursuant to any building by-law which was in operation prior to the coming into operation of the Act, shall be maintained in a safe and functional condition.
- (b) Such owner or any person appointed by such owner to be in control of such building shall ensure that where such equipment, facility or installation is designed to be kept operating during the times of normal occupancy of the building, it is kept operating in such a manner as to attain any standard of performance prescribed in these regulations or in any by-law for such equipment or installation.

- (2) The owner of any building shall ensure that pursuant to these regulations or pursuant to any building by-law that was in operation prior to the coming into operation of the Act, the following is maintained in accordance with the requirements of the relevant functional regulations contained in Regulations B, H, J, K and L:
- i) the structural safety performance (behaviour of buildings under all actions that can be reasonably expected to occur);
 - ii) the measures taken to resist the penetration of rain water and the passage of moisture into the interior of a building

66 Substitute "equipment or installation" with "building, equipment, installation or facility" in sub-regulation A15(4)

Amendment of Regulation A16

Regulation A16 of the Regulations is amended as follows:

67 Substitute "as evaluated by the Human Sciences Research Council" with "at an accredited educational institution" in Regulation A16

Amendment of Regulation A17

Regulation A17 of the Regulations is amended as follows:

68 Substitute "Town Clerk or Secretary" with "municipal manager" in sub-regulation A17(1)(e)

69 Substitute subregulation A17(2) with the following:

- (2) Sub-regulation (1) shall be deemed to be satisfied where the certificate is in accordance with that provided in SANS 10400-A.

Substitution of Regulation A19

Regulation A19 of the Regulations is substituted with the following Regulation:

70 Substitute Regulation A19 with the following:

A19 - APPOINTMENT OF PERSONS RESPONSIBLE FOR DESIGN, INSPECTION AND ASSESSMENT DUTIES

- (1) Where in terms of these regulations and in respect of the erection of any building:
- (a) a rational design or rational assessment, is required in terms of:
 - (i) Regulations Z.4(1)(b)(ii), A(1)(3), A23(4), G1(3), O4, P2(2), Q(3), R(3), T1(2) or W4 in respect of a system, measure, facility, parameter, or installation, as relevant, or
 - (ii) a part of SANS 10400; or
 - (b) a geotechnical investigation is required in terms of Regulation F3

the owner of the building shall subject to the provisions of sub-regulations (4) and (5) appoint and retain one or more approved competent persons to undertake responsibility for the work associated with such regulations including any inspections and certifications that may be required.

- (2) Where it is not possible for such person to fulfil his or her duties as contemplated in sub-regulation (1), the owner of such building shall appoint and retain another approved competent person to take over and fulfil such duties and responsibilities both in respect of the work already designed or erected or installed and in respect of the balance of such work still to be undertaken to complete the project.
- (3) The local authority may exempt from the requirements of this regulation any building classified in these regulations as minor building work or foundations to an addition or extension to a single storey building where the applicant has satisfied himself that the existing foundations are in accordance with the rules contained in SANS 10400-H and any local damage (including cracking) and deformation in the existing building are within tolerable limits.
- (4) The owner of any building who is required by these regulations to appoint an approved competent person shall state in the terms of the appointment for the competent person that such person undertake all duties and responsibilities required by these regulations. Such persons shall declare his or her acceptance of such responsibilities in the relevant portion of Form 2 contained in SANS 10400-A.
- (5) Notwithstanding the provisions of sub-regulation (1) or (2), a person may be appointed to undertake the relevant responsibilities and duties in respect of more than one of the systems, measures, facilities, parameters or installations provided for in sub-regulation (1) if the local authority accepts in terms of these regulations that he or she is competent to do so.
- (6) (a) Where any building to be extended, the local authority may on receipt of the application for such extension and before granting approval require that the approved competent persons who have accepted responsibility for such work to timeously prepare and submit rational assessments as to the adequacy of the existing systems and installations in combination with the contemplated extensions to comply with the relevant requirements of these regulations for the whole building including the extensions.
(b) If the local authority is satisfied that any such rational assessment meets the requirement of these regulations and in particular of sub-regulation 6(a) it shall accept such assessment which shall be deemed to be part of the application submitted.
(c) If the local authority is not so satisfied it may after first consulting with the competent person who has submitted such assessment and subject to appeal to the Review Board decline to accept the assessment for reasons which it shall furnish in writing to such competent person and require him or her to submit a revised assessment to the satisfaction of the local authority.
- (7) Where in a building any element of the structural, fire protection, artificial ventilation, stormwater disposal or non-water borne sanitary disposal, fire installation or drainage installation system as provided for in sub-regulation (1) is or is required to be the subject of a rational design or rational assessment, the person appointed as an approved competent person shall assume responsibility for satisfying the functional regulation relating to that particular system in its entirety.
- (8) (a) Where an approved competent person is required in terms of sub-regulation (7) to assume responsibility for the system in its entirety and where parts of the system are to be undertaken by other competent persons, the approved competent person shall assume overall responsibility for the design of such system and shall ensure that:
(i) the component designs are generally in accordance with the approved application and in accordance with the requirements of these regulations.
(ii) the component designs will achieve the necessary co-ordination and interaction of the different elements so as to achieve the objectives of the systems.

- (iii) 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
but in all cases excluding responsibility for the detailed design of elements carried out by the other competent persons, provided that such exclusion shall not preclude the approved competent person from taking any action which he or she considers necessary in terms of sub-regulation (8)(b).
- (b) (i) For the purpose of satisfying him or herself of the adequacy of any design or designs contemplated in sub-regulation (8)(a) and of their compatibility with any system, measure or installation in its entirety, the approved competent person may at any time after his or her appointment, require the designer or designers of the different elements of the system referred to in sub-regulation (8)(a) to complete Form 3 contained in SANS 10400-A as he or she may deem necessary, and return it timeously, or in any event before building construction or installation proceeds. Each such designer shall, when called upon so to do, provide the information and documents concerned in respect of the work he or she has designed.
- (ii) The person appointed as approved competent person may further require, after consultation with the designer concerned, modifications to the relevant designs, plans and specifications, if in his or her opinion they do not comply with the provisions of these regulations.
- (iii) Copies of designs, plans and specifications accepted by the approved competent person shall be submitted if so required to the local authority countersigned by the approved competent person.
- (iv) Each designer of a part of a system shall on completion of the erection or installation thereof, if called upon to do so by the approved competent person, complete and submit the section of Form 3 relating to inspection contained in SANS 10400-A.
- (c) The provisions of sub-regulation (8)(a) and (b) for designs shall also apply in the case of any applicable rational assessments.
- (9) (a) Any person appointed by the owner in terms of sub-regulations (1) or (2), shall apply to the local authority for acceptance as an approved competent person and shall:
- (i) make application, and
- (ii) declare his or her competence to undertake the relevant duties in the manner prescribed in the Regulations
on Form 2 contained in SANS 10400-A and shall complete all applicable sections of such form.
- (b) The owner shall also complete the applicable section of Form 2 contained in SANS 10400-A
- (c) The local authority may, subject to appeal to the Review Board, decline to accept the appointment of any person who:
- (i) in completing any portion of Form 2 provides incorrect or incomplete information which in the opinion of the local authority is material to the determination of such applicant's competence;
- (ii) is not an employee of the owner of the building and is not in possession of professional indemnity insurance cover;
- (iii) is not professionally registered in terms of the Engineering Professions Act, 2000 (Act No. 46 of 2000), the Architectural Professions Act (Act No. 44 of 2000) or the National Scientific Professions Act, 2003 (Act No. 27 of 2003);
- (iv) is in the opinion of the local authority inadequately qualified or has insufficient experience or contextual knowledge to make the determinations that are required in terms of these regulations, provided however that any person that satisfies the relevant definition for a competent person provided in a part of SANS 10400 in relation to the duties contemplated in this sub-regulation, is deemed to satisfy this sub-regulation; and

- (v) is under investigation by a disciplinary tribunal of the Engineering Council of South Africa, the South African Council for the Architectural Profession or the South African Council for Natural Scientific Professions and the chief executive officer of such a Council has expressed an opinion in writing that the applications made by such persons should not be approved in the public interest.
- (10) (a) Where in respect of any building the local authority, after consideration of:
 - (i) the details of registration in respect of category, date and discipline in which the applicant is registered, qualifications, experience, training and contextual knowledge provided in terms of this regulation by any person seeking acceptance of his or her appointment as a competent person, and
 - (ii) the declaration of competence provided by such person in terms of sub-regulation (9),
 considers that such person does not possess the degree of competence necessary to undertake the relevant duties, it may decline to accept the appointment of such person, who may appeal to the Review Board.
 - (b) If the appeal is upheld, the local authority shall accept the appointment of the appellants as a person competent to undertake such duties or any part thereof in respect of such building as the Review Board may decide.
- (11) Where the local authority is satisfied with an application in respect of the matters specified in sub-regulations (10)(a)(i) and (ii) it shall indicate acceptance of the application in the manner specified in Form 2 as contained in SANS 10400-A.
- (12) (a) On completion of the structural, fire protection or fire installation system for which an approved competent person has been appointed in terms of sub-regulations (1) or (2), such competent person shall complete and submit to the local authority a fully completed Form 4 as contained in SANS 10400-A in respect of each such system for which such person has accepted responsibility in terms of Section 14(2A) of the Act 103.
 - (b) The local authority may require from the owner that an approved competent person submit a copy of the certification of the specific work, other than the structural, fire protection or fire installation, for which he has been appointed on completion of the building.
- (13) 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

Amendment of Regulation A20

Regulation A20 of the Regulations is amended as follows:

71 Add the following definitions to Table 1:

E4	<p>Health care Occupancy which is a common place of long term or transient living for a number of unrelated persons consisting of a single unit on its own site who, due to varying degrees of incapacity, are provided with personal care services or are undergoing medical treatment.</p>
H5	<p>Hospitality Occupancy where unrelated persons rent furnished rooms on a transient basis within a dwelling house or domestic residence with sleeping accommodation for not more than 16 persons within a dwelling unit.</p>

Amendment of Regulation A21

Regulation A21 of the Regulations is amended as follows:

72 Substitute Table 2 with the following table:

1	2
Class of occupancy of room or storey or portion thereof	Population
A1, A2, A4, A5	Number of fixed seats or 1 person per m ² if there are no fixed seats
E1, E3, H1, H3, H4	2 persons per bedroom
E4	16 persons provided that the total number of persons per room is not more than 4
H5	16 persons per dwelling unit provided that the total number of persons per room is not more than 4
G1	1 person per 15 m ²
J1, J2, J3, J4	1 person per 50 m ²
C1, E2, F1, F2	1 person per 10 m ²
B1, B2, B3, D1, D2, D3	1 person per 15 m ²
C2, F3	1 person per 20 m ²
A3, H2	1 person per 5 m ²

Amendment of Regulation A22

Regulation A22 of the Regulations is amended as follows:

73 Add "(d) the building will be completed" to sub-regulation A22(2)

Amendment of Regulation A23

Regulation A23 of the Regulations is amended as follows:

74 Substitute "a professional engineer or other" with "an" in sub-regulation A23(4)

Amendment of Regulation B1

Regulation B1 of the Regulations is amended as follows:

75 Add "under all actions which can reasonably be expected to occur" after "durability" in sub-regulation B1(1)

76 Substitute "part B of Section 3 of SABS 0400" with "SANS 10400-B" in sub-regulation B3(3)

Amendment of Regulation C

Regulation C of the Regulations is amended as follows:

77 Substitute "part C of Section 3 of SABS 0400" with "SANS 10400-C" in sub-regulation C1(3)

Amendment of Regulation D

Regulation D of the Regulations is amended as follows:

78 Substitute "part D of Section 3 of SABS 0400" with "SANS 10400-D" in sub-regulation D5

Amendment of Regulation F

Regulation F of the Regulations is amended as follows:

79 Substitute Regulation F3 with the following:

F3 GEOTECHNICAL SITE AND ENVIRONMENTAL CONDITIONS

- (1) Where the local authority has reason to believe that a site upon which a building is to be erected:
 - (a) is situated on contaminated land;
 - (b) is situated on potentially unstable land to the extent, insofar as risk can reasonably be foreseen, that ground movements caused by land-slip, slope stability or subsidence may impair the stability of the building or part thereof or pose a threat to the safety of occupants; or
 - (c) is underlain by subsoils which have the potential to cause foundation movements caused by swelling, consolidation, shrinkage or settlements and as a result may impair the stability of the building or part thereof;it shall on receipt of an application for the erection of the building inform the applicant accordingly.
- (2) On receipt of any such notification or where the applicant is aware of such conditions or they are evident, such applicant shall appoint an approved competent person to undertake an appropriate geotechnical site investigation.
- (3) Such approved competent person shall, as appropriate, determine in accordance with accepted principles, methods and technical considerations, as relevant:
 - (a) whether or not the erection of a building on the site under (1) (a) or (1) (b) above should be permitted, and if so under what conditions, providing full details of the measures which need to be effected to fulfil such conditions and
 - (b) the magnitude of any potential total and differential movements to which the building or part thereof may be subjected to,and shall report to the owner and the local authority such findings.
- (4) Geotechnical investigations conducted in accordance with the requirements of SANS 10400-B in the case of dolomite lands and SANS 10400-H in the case of foundations for buildings shall in terms of F3(2) be deemed to be appropriate investigations
- (5) The measures contemplated in sub-regulations (3)(a) and (b) shall be applied in the erection of the building and the site works.

80 Add "seasonally waterlogged" after "waterlogged" in sub-regulation F4(2)

81 Substitute "SABS 0124" with "SANS 10124" in sub-regulation F5 wherever it occurs

82 Substitute Regulation F5 with the following:

- (1) Buildings shall, where so required by the local authority or in areas of high termite infestation, be protected from subterranean termite activity.
- (2) The requirements of subregulation (1) shall be deemed to be satisfied where the means of termite protection complies with SANS 10400-F.

83 Substitute the title of Regulation F6 with the following:

CONTROL OF UNREASONABLE LEVELS OF DUST AND NOISE

84 Substitute sub-regulation F6(2)(a) and F6(2)(b) with the following and renumber F6(2)(c) as F6(2)(b):

(2) (a) No person shall during the course of any building, demolition or excavation work use any machine, machinery, engine, apparatus, tool or contrivance, which in the opinion of the local authority may unreasonably disturb or interfere with the amenity of the neighbourhood:

(i) on a public holiday or Sunday

(ii) before 06:00 or after 17:00 on any Saturday; and

(iii) before 06:00 or after 18:00 on any day other than those days contemplated in subparagraphs (i) and (i)

85 Substitute "part F of Section 3 of SABS 0400" with "SANS 10400-F" in sub-regulation F11(3)

Amendment of Regulation G

Regulation G of the Regulations is amended as follows:

86 Add " or an approved competent person" before "in such authorisation in sub-regulation G1(3)(b).

87 Substitute "part G of Section 3 of SABS 0400" with "SANS 10400-G" in sub-regulation G2

Amendment of Regulation H

Regulation H of the Regulations is amended as follows:

88 Substitute sub-regulation H1(1) with the following:

(1) The foundation of any building shall be designed and constructed to safely transmit all the actions which can reasonably be expected to occur from such building to the ground and in such a manner that any local damage (including cracking), deformation or vibration do not compromise the efficient use of a building or the functioning of any element of a building or equipment within a building.

89 Substitute "part H of Section 3 of SABS 0400" with "SANS 10400-H" in sub-regulation H1(2)

Amendment of Regulation J

Regulation J of the Regulations is amended as follows:

90 Substitute sub-regulation J1(1)(a) with the following:

(a) be designed and constructed to safely support its own weight and any actions which can reasonably be expected to occur and in such a manner that any local damage (including cracking), deformation or vibration do not compromise the efficient use of the building or the functioning of equipment supported by such floor; and

91 Substitute "WC" in sub-regulation J1(2) with "toilet"

92 Substitute sub-regulation J(5) with the following:

- (5) The requirements of subregulations (1), (2), (3) and (4) shall be deemed to be satisfied where the design and construction of any floor complies with SANS 10400-J: Provided that where the local authority deems it necessary in order to satisfy the requirements of subregulation (4), such local authority may require that the entire area within the foundation walls of any building be covered by a suitable damp-proof membrane, and in the case of the floor of a basement or semi-basement where the highest known level of the extreme watertable is higher than the floor level of the basement to such an extent that uplift of the floor might occur, the local authority may require that adequate sub-soil drains under the floor be provided together with means of removing the water so drained.

Amendment of Regulation K

Regulation K of the Regulations is amended as follows:

93 Substitute sub-regulation K1 with the following:

Any wall shall be designed and constructed to safely sustain any actions which can reasonably be expected to occur and in such a manner that any local damage (including cracking) or deformation do not compromise the opening and closing of doors and windows or the weather tightness of the wall and in the case of any structural wall, be capable of safely transferring such actions to the foundations supporting such wall.

94 Substitute sub-regulation K2 with the following:

- (1) Any wall shall be so constructed that it will adequately resist the penetration of water into any part of the building where it would be detrimental to the health of occupants or to the durability of such building.
- (2) Where a building includes a basement or semi-basement, the local authority may, if it considers that conditions on the site on which the building is to be erected necessitate integrated designs for the penetration of water into such basement or semi-basement applicable to all construction elements or components thereof, require the submission of such designs for approval. Construction shall be in accordance with the requirements of the approved design.

95 Substitute "forces" with "actions" in sub-regulation K3

96 Substitute "part K of Section 3 of SABS 0400" with "SANS 10400-K" in sub-regulation K5

Amendment of Regulation L

Regulation L of the Regulations is amended as follows:

97 Substitute sub-regulation L1 with the following:

The roof of any building shall be so designed and constructed that it -

- (a) safely sustains any actions which can reasonably be expected to occur and in such a manner that any local damage (including cracking) or deformation do not compromise its functioning;
- (b) is adequately anchored against wind uplift;
- (c) is durable and does not allow the penetration of rainwater or any other surface water to its interior;
- (d) does not allow the accumulation of any water upon its surface; and
- (e) as part of a roof and ceiling assembly, provides adequate height in any room immediately below such assembly.

98 Substitute "part L of Section 3 of SABS 0400" with "SANS 10400-L" in sub-regulation L3

Amendment of Regulation M

Regulation M of the Regulations is amended as follows:

99 Substitute M1 with the following:

Any stairway, including any wall, screen, railing or balustrade to such stairway, shall:

- (a) be capable of safely sustaining any actions which can reasonably be expected to occur and in such a manner that any local damage (including cracking) or deformation do not compromise its functioning;
- (b) permit safe movement of persons from floor to floor; and
- (c) have dimensions appropriate to its use.

100 Substitute "part M of Section 3 of SABS 0400" with "SANS 10400-M" in sub-regulation M3

Amendment of Regulation N

Regulation N of the Regulations is amended as follows:

101 Substitute sub-regulation N1(1)(a) with the following:

"a) safely sustain any wind actions which can reasonably be expected"

102 Substitute sub-regulation N1(3) with the following:

Replace "part N of Section 3 of SABS 0400" with "SANS 10400-N"

Amendment of Regulation O

Regulation O of the Regulations is amended as follows:

103 Substitute "WC" with "toilet" in sub-regulation O1(1)

104 Substitute sub-regulation O1(2) and O1(3) with the following:

- (2) The requirement of subregulation (1) shall be deemed to be satisfied where the lighting and ventilation are in accordance with SANS 10400-O
- (3) (a) Notwithstanding the provision of any openings for natural light in accordance with subregulation (2) any room contemplated in subregulation (1) or any corridor, lobby or staircase serving such room shall be provided with a means of artificial lighting-
 - (i) for periods when natural lighting is inadequate; or
 - (ii) where the size or shape of any such room, or the glazing material used in any such opening, will not permit sufficient natural light effectively to illuminate all parts of such room.
- (b) Notwithstanding the provision of openings for natural ventilation in accordance with subregulation (2) any room subject to the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), shall in terms of the said Act be provided with artificial ventilation as prescribed by such Act; and any room contemplated in subregulation (1) which is -
 - (i) a room which, due to conditions of high temperature, may be dangerous to safety or health;
 - (ii) a room where there will be dust, gas, vapour or volatile matter and hazardous biological agents which might be dangerous to safety or health; or
 - (iii) used for any purpose for which natural ventilation is not suitable, shall be provided with a means of artificial ventilation.

105 Substitute sub-regulation O4 with the following:

Any rational design of an artificial ventilation system shall be carried out by or under the supervision of an approved competent person who shall certify in accordance with the requirements of Regulation A19 that the system has been designed to comply with regulation O1.

106 Substitute "part O of Section 3 of SABS 0400" with "SANS 10400-O" in sub-regulation O5(2)

107 Substitute sub-regulation O6 with the following

- (1) The owner shall at acceptable intervals of time submit to the local authority test reports indicating that any artificial ventilation system installed in terms of these regulations is operating in the designed manner,
- (2) Records and log books shall be kept of the commissioning information, operational management, monitoring and maintenance and repair of all ventilation plant, including individual ventilation fans.
- (3) Where specialist ventilation plants are provided as part of the protection measures against hazardous substances, and for the protection of occupants and to ensure safe procedures, such as in hospital theatres, such plant shall be inspected and validated at least every 12 months by an independent competent person.

Amendment of Regulation P

Regulation P of the Regulations is amended as follows:

108 Substitute "loads and forces" with "actions" in sub-regulation P2(1)(f)

109 Substitute sub-regulation **P2(2)** with the following:

- (2) The requirements of subregulation (1) shall be deemed to be satisfied where such installation complies with SANS 10400-P: Provided that where a local authority is of the opinion that the size or complexity of the drainage installation in any building renders it essential for such installation to be the subject of an approved rational design prepared by an approved competent person, such local authority shall, in writing, notify the owner of such building of its reasons for the necessity for such design and may require such owner to submit for approval plans and particulars of a complete drainage installation based on such design.

110 Substitute sub-regulation **P3(1)(b)** with the following:

- (b) subject to the National Water Act, 1998 (Act No 36 of 1998), any river, stream or natural watercourse whether ordinarily dry or otherwise; or

111 Substitute "part P of Section 3 of SABS 0400" with "SANS 10400-P" in sub-regulation **P7(1)**

Amendment of Regulation Q

Regulation **Q** of the Regulations is amended as follows:

112 Substitute sub-regulation **Q1** with the following:

Where water-borne sewage disposal is not available other means of sewage disposal shall be permitted by the local authority: Provided that:

- a) it stores, conveys, processes and disposes of human body wastes and wastewater in such a way that the pathogens, pollutants and contaminants associated therewith do not compromise the health and safety of the original user or others; and
b) in the case of chemical or toilet a satisfactory means is available for the removal and disposal of sewage from such closets;

113 Substitute "latrine" with "toilet" in sub-regulation **Q2**

114 Substitute sub-regulation **Q3(3)(a)** with the following:

- (3) (a) The requirements of subregulation (1) shall be deemed to be satisfied where the design and construction, siting of, and access to such other means of sewage disposal complies with SANS 10400-Q; Provided however that where a local authority is of the opinion that the nature of the means of sanitary disposal is such that it is essential for such installation to be the subject of an approved rational design prepared by an approved competent person, such local authority shall, in writing, notify the owner of such building of its reasons for the necessity for such design and may require such owner to submit for approval plans and particulars of a complete installation based on such design

Amendment of Regulation R

Regulation R of the Regulations is amended as follows:

115 Substitute sub-regulation R1(3) with the following:

- (3) The requirements of subregulation (1) shall be deemed to be satisfied where such means of stormwater disposal is provided in accordance with SANS 10400-R: Provided that where a local authority is of the opinion that the conditions on any site render it essential for stormwater disposal to be the subject of an acceptable rational design prepared by an approved competent person, such local authority shall, in writing, notify the owner of such site of its reasons for the necessity for such design, and may require such owner to submit for approval plans and particulars of a complete stormwater control and disposal installation for such site and for any building erected thereon, based on such design.

Substitution of Regulation S

116 Regulation S of the Regulations is substituted with the following Regulation:

PART S. FACILITIES FOR PERSONS WITH DISABILITIES

S1. APPLICATION

- (1) Facilities that accommodate persons with disabilities shall be provided in any building except the following:
- (a) any building of which the whole of the ground storey comprises one or more occupancies classified in terms of regulation A20 as B1, B2, D4, H4, J1 or J2
 - (b) any building classified as H1 in terms of regulation A20 where such building has less than 25 bedrooms and it can be reasonably proven that it is not possible to include wheelchair access in certain aspects of the design; and
 - (c) any storey above ground floor level of a building classified as H3 in terms of regulation A20 and not provided with a lift.

S2. FACILITIES TO BE PROVIDED

- (1) In any building contemplated in regulation S1 requiring facilities for persons with disabilities:
- (a) persons with disabilities shall be able to safely enter the building, use all the facilities subject to the provisions of sub-regulation (3) within it and leave it;
 - (b) there shall be a means of access suitable for use by persons with disabilities, from the main and ancillary approaches of the building to the ground storey; via the main entrance, and any secondary entrance;
 - (c) there shall be a means of egress suitable for use by persons with disabilities from any point in a building to a place of safety in the event of an emergency;
 - (d) any lift installation that is provided shall be capable of serving the needs of persons with disabilities who are likely to be using the building; and (e) any commonly used path of travel shall be free of obstacles which limit, restrict or endanger the travel of persons with disabilities, or which prevent persons with disabilities from accessing the facilities provided in the building and the presence of such obstruction shall be made evident in a suitable manner to persons with impaired vision; and

- (f) a suitable means of access shall be provided to any auditorium or hall situated in any building and such auditorium or hall shall, in relation to its seating capacity, be provided with sufficient open space to accommodate a reasonable number of people who use wheelchairs or other assistive devices.
- (2) Where parking for more than 50 motor vehicles is provided in or in connection with any building having a means of access contemplated in subregulation (1), adequate parking space shall be provided for the parking of motor vehicles used by persons with disabilities and a suitable means of access shall be provided from the parking area, whether such parking area be inside or outside such building, to the ground storey of such building.
- (3) Where, in terms of regulation P1, toilet facilities are required and the building is one requiring facilities for persons with disabilities in terms of regulation S1, an adequate number of such facilities shall be suitable for use by persons with disabilities: Provided that toilet facilities shall not be required in any such building classified as H3 in terms of regulation A20.

S3. DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulation S2 shall be deemed to be satisfied where:

- (a) the facilities provided are in accordance with SANS 10400-S
- (b) the egress from the building in the event of fire is in accordance with SANS 10400-T.

Amendment of Regulation T

Regulation T of the Regulations is amended as follows:

117 Replace T(1)(a) with the following:

- (a) the protection of occupants or users, including persons with disabilities, therein is ensured and that provision is made for the safe evacuation of such occupants or users;

118 Substitute sub-regulation T1(2) with the following:

- (2) The requirements of subregulation (1) shall be deemed to be satisfied where the design, construction and equipment of any building complies with SANS 10400-T: Provided that where any local authority is of the opinion that such compliance would not comply with all the requirements of subregulation (1), such local authority shall, in writing, notify the owner of the building of its reasons for its opinion and may require the owner to submit for approval a rational design prepared by an approved competent person.

(3)

119 Substitute sub-regulation T2(1)(a) with the following:

- (1) Any owner of any building who fails to -
 - (a) provide sufficient fire extinguishers to satisfy the requirements of subregulation T1(1)(e), or who installs fire extinguishers that do not comply with the relevant South African national standard, or who fails to ensure that such fire extinguishers are installed, maintained and serviced in accordance with SANS 10105; or

Amendment of Regulation V

Regulation V of the Regulations is amended as follows:

120 Substitute "part V of Section 3 of SABS 0400" with "SANS 10400-V" in sub-regulation V1(2)

Amendment of Regulation W

Regulation **W** of the Regulations is amended as follows:

- 121 Substitute " Any approved fire installation" with "All approved fire installations" in sub-regulation **W1**.
- 122 Substitute "pumping connection" with "and suitable connection" in sub-regulation **W3(a)**
- 123 Substitute Regulation **W4** with the following:

The requirements of regulation **W3** shall be deemed to be satisfied where any fire installation complies with SANS 10400-W; Provided that where a local authority is of the opinion that it essential for the fire installation to be the subject of an acceptable rational design prepared by an approved competent person, such local authority shall, in writing, notify the owner of such site of its reasons for the necessity for such design, and may require such owner to submit for approval plans and particulars of a complete fire installation, based on such design.

SABS 0400:1990

1999-07-30 AMENDMENT OF NATIONAL BUILDING REGULATION A13: BUILDING MATERIALS AND TESTS

Regulation A13 (1) (b):

Delete the existing text and insert the following:

A13 BUILDING MATERIALS AND TESTS

- (1) (b) All timber shall be treated against termite and wood borer attack and fungal decay, and treatment shall be in accordance with a recognized method and the local authority may require proof of such treatment; and

SABS 0400-1990

Technical Corrigendum 1

(published 22 May 1996)

Page 13. In the definition of "division wall", amend "regulations" to read "rules".

Page 45. In subclauses (c) and (d), amend "Director General" to read "President".
In subclause (f), amend "R100" to read "R100 + VAT".

Page 135. In column 7 of table 13, amend "7 500" to read "9 500", and in column 12, amend "15 500" to read "18 500".

SOUTH AFRICAN BUREAU OF STANDARDS

CODE OF PRACTICE

for

THE APPLICATION OF THE NATIONAL BUILDING REGULATIONS

1. SCOPE

- 1.1 This code of practice covers provisions for building site operations and building design and construction that are deemed to satisfy the provisions of the National Building Regulations. In certain cases, commentary on the application of the deemed-to-satisfy rules and on standardization of the application of the regulations has been included.

NOTE: A specimen form and certificate for local authority use and a sign to indicate facilities for disabled persons are given in Appendix 1.

2. DEFINITIONS

- 2.1 Any term defined in the National Building Regulations has the same meaning when used in this code. Particular attention is drawn to the definition of "council". In both the regulations and the code any term that is not defined shall be assumed to have its ordinarily accepted meaning or that which the context may imply. In addition, in accordance with the normal tenets of law, words used in the present tense include the future; words used in the masculine gender include the feminine; and the singular number includes the plural and the plural the singular.

For the purposes of this code the following definitions shall apply:

"acceptable", "adequate", "satisfactory" or "suitable" means acceptable, adequate, satisfactory or suitable —

(a) in the opinion of any local authority; or

(b) in relation to any document issued by the council, in the opinion of the council;

"access door" means an entrance door to an emergency route;

"air conditioning system" means a system of mechanical ventilation where air that has been cleansed is supplied to a building under conditions of controlled temperature, humidity, distribution and movement;

"air duct" means any pipe, tube, conduit or enclosed space used or to be used in any building for the transmission of air in an artificial ventilation system;

"applicant" means any person who makes an application;

"application" means an application contemplated in section 4 of the Act;

"approval" means —

(a) approval by any local authority, including approval contemplated in section 7(7)(b) of the Act; or

(b) approval by the review board on appeal to the review board in terms of the Act;

"approved" means —

(a) approved by any local authority; or

(b) approved by the review board on appeal to the review board in terms of the Act;

"artificial ventilation system" means a system in which air is caused to circulate through a room by means of a mechanical apparatus which forces air into or extracts air from such room;

"automatic" in relation to fire-doors, fire-shutters, fire-dampers, fire-alarms, or fire extinguishing equipment means fitted with an approved device which is activated by a predetermined amount of heat, smoke, combustion gases or flame without the need for any manual operation;

“**backflow**” means the flow of water in any pipe in a direction opposite to the normal direction of flow;

“**back siphonage**” means the backflow of water resulting from negative pressure in a water installation or in the water supply system;

“**back vent**” means a ventilating pipe connecting a branch discharge pipe, to which unvented fixture discharge pipes are connected, to a vent stack or to a stack vent;

“**balustrade wall**” means a wall serving the purpose of a balustrade;

“**block**” means any masonry unit which has a length of more than 300 mm or a width of more than 130 mm;

“**branch discharge pipe**” means a horizontal discharge pipe conveying the discharge from one or more sanitary fixtures to a discharge stack;

“**branch drain**” means any drain which discharges into a main drain;

“**branch vent**” means a horizontal ventilating pipe connecting two or more trap vents to a vent stack or to a stack vent;

“**brick**” means any masonry unit which is not a block;

“**building height**” means the dimensional height in metres measured from the lowest ground level abutting any part of the building to the level of —

(a) the underside of a flat roof; or

(b) the underside of the roof of any plant room on such flat roof where the plan area of the plant room is more than 10 % of the area of such flat roof; or

(c) a horizontal ceiling which is immediately under any pitched roof; or

(d) half-way between the eaves level and the ridge of any pitched roof where there is no ceiling below such roof or where the ceiling follows the pitch of such roof;

“**building line**” in relation to a site, means a line prescribed in any town planning scheme or any other law designating the boundaries of the area of the site outside of which the erection above ground of any building is prohibited;

“**capacity**” of any storage tank means the volume of such tank between the operating level of the water contained in such tank and the invert of the outlet from the tank;

“**carport**” means a building intended to provide shelter for a motor vehicle, caravan or boat and having a roof but having walls on not more than two sides;

“**chemical closet**” means a closet with a fixed pan, the excreta from which pass into a tank where they are acted upon by chemicals which sterilize and break them down;

“**chimney**” means that part of a building which forms part of a flue, but does not include a flue pipe;

“**class**”, in relation to a fire-door or fire-shutter, means the class thereof as defined in SABS 1253;

“**cleaning eye**” means any access opening to the interior of a discharge pipe or trap provided for the purposes of internal cleaning, and which remains permanently accessible after completion of the drainage installation;

“**combustible**” means the opposite of non-combustible;

“**common drain**” means that portion of a drain which conveys sewage other than or in addition to that sewage which emanates from the site through which such drain runs;

“**communication pipe**” means any pipe in a water supply system to which any water installation is connected;

“**competent person**” means a person who is qualified by virtue of his experience and training;

“**connecting sewer**” means a pipe vested in the local authority which connects a drain to a sewer;

“**conservancy tank**” means a covered tank used for the reception and temporary retention of sewage and which requires emptying at intervals;

“**consumer**” means any person who is obtaining a supply of water from the local authority;

“**council**” means the Council of the South African Bureau of Standards;

“**cross vent**” means a ventilating pipe connecting a discharge stack to a vent stack;

“**dark room**” means any room used for the purposes of handling or processing light sensitive material;

“**dead-end corridor**” means any corridor along which it is possible to travel only in one direction in order to reach a feeder route or emergency route;

“**dead load**” means the gravitational force caused by the static mass of all permanent parts of a building;

“**deemed-to-satisfy rule**” (or rule) means a non-mandatory provision which describes a method of design or construction that is deemed to comply with a particular functional regulation;

“**developed length**” of any pipe means the length between two specified points on such pipe measured along the centre line of such pipe, including any bend, junction or similar fitting;

“**discharge pipe**” means a pipe which conveys the discharge from a sanitary fixture to a drain, and includes a soil pipe, a waste pipe, a discharge stack, a branch discharge pipe or a fixture discharge pipe;

“**discharge stack**” means any vertical discharge pipe which conveys the discharge from two or more sanitary fixtures and which is connected directly to a drain;

“**division**” means a portion of a building separated from the remainder of such building by one or more separating elements;

“**division wall**” means an internal wall that separates one division from another division in any building and that has a fire resistance of not less than that required by these regulations;

“**domestic effluent**” means sewage consisting of soil water or waste water or a combination of both;

“**drain**” means that part of any drainage installation outside a building and which is below ground level, but shall not include the following —

(a) any discharge pipe;

(b) that portion of a discharge stack which is below ground level;

(c) the bend at the foot of a discharge stack;

“**drainage installation**” means any installation vested in the owner of a site and which is situated on such site and is intended for the reception, conveyance, storage or treatment of sewage, and may include sanitary fixtures, traps, discharge pipes, drains, ventilating pipes, septic tanks, conservancy tanks, sewage treatment works, or mechanical appliances associated therewith;

“**drencher system**” means an approved system of piping and outlets which, when actuated manually or by the action of fire, releases a continuous curtain of water;

“**dwelling house**” means a single dwelling unit and any garage and other domestic outbuildings thereto, situated on its own site;

“**dwelling unit**” means a unit containing one or more habitable rooms and provided with adequate sanitary and cooking facilities;

“**electrical sanitary fixture**” means a device which is connected to an electricity supply and to a water supply to perform a function such as the washing of clothes or dishes, or rendering waste matter suitable for disposal into a discharge pipe and includes a food-waste disposer, and a sanitary-towel disposer;

“**emergency route**” means that part of an escape route which provides fire protection to the occupants of any building and which leads to an escape door;

“**escape door**” means that door in an escape route which, at ground level, leads directly to a street or public place or to any approved open space which leads to a street or public place;

“**escape route**” means the entire path of travel from the furthest point in any room in a building to the nearest escape door and may include an emergency route;

“**evapo-transpirative bed**” means an effluent disposal system comprising a shallow sand-filled excavation covered with top soil and planted over with suitable vegetation;

“**exit door**” means any door that is a component of an escape route from any room;

“**feeder route**” means that part of an escape route which allows travel in two different directions to the access doors to at least two emergency routes;

“fire-damper” means an automatic damper and its assembly that complies with the requirements contained in SABS 193;

“fire-door” or **“fire-shutter”** means an automatic or self-closing door or shutter assembly especially constructed to prevent the passage of fire for a specific length of time;

“fire installation” means any water installation which conveys water solely for the purpose of fire-fighting;

“fire load” means the sum of the heat energy values of all combustible materials, including combustible partitions and other exposed combustible elements, contained in a compartment or division;

“fire resistance” means the shortest period for which a building element or component will comply with the requirements for stability, integrity and insulation when tested in accordance with SABS 0177: Part II;

“fire-stop” means a draft tight barrier or seal placed within or between building elements in shafts, voids and other concealed spaces to retard the spread of flame, heat or smoke;

“fixture branch” means a horizontal fixture discharge pipe;

“fixture discharge pipe” means a discharge pipe which conveys the discharge from a single sanitary fixture;

“fixture unit” means an arbitrary unit of measure for expressing the hydraulic loading on a drainage installation;

“fixture unit rating” means the value in fixture units assigned to a sanitary fixture from a consideration of the duration of its discharge, the interval between discharges and its mean discharge rate;

“flammable” means having a closed cup flash point lower than 90 °C;

“floor area”, in relation to a building or a storey thereof, means the total area enclosed within its external walls, exclusive of the area occupied by any lift shaft;

“flight” means that part of a stairway which consists of consecutive steps;

“flue” means a passage which conveys the discharge of a heat generating appliance to the external air;

“flue pipe” means a pipe forming a flue but does not include a pipe built as a lining into a chimney;

“foundation” means that part of a building which is in direct contact with and is intended to transmit loads to the ground;

“foundation wall” means that portion of a wall between the foundation and the lowest floor above such foundation;

“free-standing wall” means a wall, not being a retaining wall, without lateral support;

“french drain” means a trench filled with suitable material which is used for the disposal of liquid effluent from a septic tank or waste water;

“functional regulation” means a regulation that sets out what is required of a building, building element or building component in respect of a particular characteristic without specifying the method of construction, dimensions or materials to be used;

“garage” means an enclosed area which is used or intended to be used for the parking, storing, servicing or repairing of motor vehicles;

“general installation” means any water installation which conveys water for any purpose other than fire-fighting;

“going” means the distance (measured on plan) between the nosing of a tread and the nosing of the tread or landing next above it;

“gully” means a pipe fitting incorporating a trap into which waste water is discharged;

“habitable room” means a room used or designed, erected, adapted or intended to be used by persons for sleeping in, living in, the preparation or consumption of food or drink, the transaction of business, the rendering of professional services, the manufacture, processing or sale of goods, the performance of work, the gathering together of persons or for recreational purposes;

“height” means building height;

“high risk substance” means any substance listed in the schedule to the Administrative Regulations, as amended, made in terms of the Machinery and Occupational Safety Act, 1983 (Act 6 of 1983);

“horizontal”, in relation to a discharge pipe or ventilating pipe, means inclined at less than 45 ° to the horizontal;

“imposed load” means any force assumed in the design of any building, caused by the intended occupancy thereof or by earth pressure, snow, hail, groundwater or the ponding of rainwater;

“incremental house” means any dwelling house that, for reasons of affordability, is to be constructed in stages in such a manner that in its intermediate stages the house can be occupied by its owner for the specified limited period of time necessary to complete it and that is intended, in its finally approved form, to have a total plan area of not more than 80 m²;

“industrial effluent” means any liquid whether or not containing matter in solution or suspension which is given off in the course of or as a result of any industrial, trade, manufacturing, mining or chemical process or any laboratory, research or agricultural activity, and includes any liquid other than soil water or stormwater;

“inspection chamber” means a chamber not deeper than 750 mm and of such dimension that access may be obtained to a drain without requiring a person to enter into such chamber;

“inspection eye” means any access opening to the interior of any pipe or pipe fitting in a drainage installation provided solely for the purpose of inspection and testing, and to which permanent access after completion of the drainage installation need not be provided;

“laminated glass” means two sheets of ordinary annealed glass bonded to a shear and impact resistant plastic interlayer;

“laminated toughened glass” means a laminated glass where one or both sheets of ordinary annealed glass are replaced by a sheet or sheets of toughened glass;

“landing” means a platform between two consecutive flights of a stairway;

“lateral boundary” means a boundary of a site other than a boundary between such site and any street or public place with a width of more than 6 m measured at right angles to such boundary;

“load” means any force to which a building is or may be subjected, and includes dead, imposed, wind and seismic loads and forces caused by dimensional changes of materials;

“main drain” means the longest run of drain from a building to a common drain, to a means of sewage disposal situated on the site concerned, or to a connecting sewer;

“manhole” means a chamber of a depth greater than 750 mm and of such dimension that allows entry of a person into such chamber for the purpose of providing access to a drain;

“masonry wall” means an assemblage of masonry units joined together with mortar or grout;

“mezzanine storey” means any mezzanine storey the floor area of which does not exceed 25 % of that of the floor below it;

“minor building work” as contemplated in section 13 of the Act means —

(a) the erection of any —

(i) poultry house not exceeding 10 m² in area;

(ii) aviary not exceeding 20 m² in area;

(iii) solid fuel store not exceeding 10 m² in area and 2 m in height;

(iv) tool shed not exceeding 10 m² in area;

(v) child's playhouse not exceeding 5 m² in area;

(vi) cycle shed not exceeding 5 m² in area;

(vii) greenhouse not exceeding 15 m² in area;

(viii) open-sided car, caravan or boat shelter or a carport where such shelter or carport does not exceed 40 m² in area;

(ix) any free-standing wall constructed of masonry, concrete or timber or any wire fence where such wall or fence does not exceed 1,8 m in height;

(x) any pergola;

(xi) private swimming pool;

(xii) change room, not exceeding 10 m² in area, at a private swimming pool;

(b) the replacement of a roof or part thereof with the same or similar material;

(c) the conversion of a door into a window or a window into a door without increasing the width of the opening;

(d) the making of an opening in a wall which does not affect the structural safety of the building concerned;

(e) the partitioning or the enlarging of any room by the erection or demolition of an internal wall if such erection or demolition does not affect the structural safety of the building concerned;

(f) the erection of any solar water heater not exceeding 6 m² in area on any roof or 12 m² when erected other than on any roof; and

(g) the erection of any other building where the nature of the erection is such that in the opinion of the building control officer it is not necessary for the applicant to submit, with his application, plans prepared in full conformity with these regulations;

“**natural ventilation**” means the movement of air through a building due to natural causes;

“**non-combustible**” means classified as non-combustible when tested in accordance with code of practice SABS 0177: Part V;

“**non-structural wall**” means a wall which does not form part of a structure but which may from time to time be subject to forces other than its own weight;

“**nosings**” means the front edge of a tread and includes the front edge of the top surface of any landing which is situated at the top of a flight;

“**obstruction**” means any building or other object which partially or completely intersects any zone of space serving a window but shall not include any narrow object such as a pole or railing which does not materially obstruct the entry of light and air to the opening concerned;

“**occupancy**” means the particular use or the type of use to which a building or portion thereof is normally put or intended to be put;

“**one-pipe system**” means a system of piping between sanitary fixtures and a drain in which both waste and soil water discharge down a common discharge stack and in which any trap venting or other venting that is required may be via a common vent stack;

“**operating water level**” means the level of water reached in any storage tank when the valve controlling the inlet of water to such tank closes under normal operating conditions;

“**outside air**” means air which is drawn into the building from the outside and which has not been circulated through such building;

“**overflow gully**” means a gully which allows the overflow of sewage but prevents the ingress of foreign matter, including rainwater directly from above;

“**pail closet**” means a closet with a removable pail which is systematically emptied or replaced;

“**partition**” means an interior construction less than one storey in height and is generally of a light construction and is demountable;

“**partition wall**” means a non-structural internal wall extending to the ceiling and constructed for the purpose of subdividing a space;

“**pit latrine**” means a closet placed over or adjacent to an excavation which is of adequate depth;

“**pitch line**” means a notional line which connects the nosings of all the treads in a flight or stairs;

“**population**” means the population determined in accordance with regulation A21;

“**prescriptive rule (or prescriptive regulation)**” means a rule or regulation which describes in some detail an operation to be performed, or the dimensions of a building, building element or building component and the materials and method of construction to be used in such building, building element or building component;

“pressurization” means the creation of a positive air pressure differential between one area of and the remainder of a building and **“pressurized”** shall have a corresponding meaning;

“public place” means any square, park, recreation ground or open space which —

(a) is vested in the local authority; or

(b) the public has the right to use; or

(c) is shown on a general plan of a township filed in a deeds registry or a Surveyor-General’s office and has been provided for or reserved for the use of the public or the owners of erven in such township;

“range” means a number of like sanitary fixtures closely spaced and discharging to a common branch discharge pipe which does not receive the discharge from any other sanitary fixture not in the range;

“rational design” means any design involving a process of reasoning and calculation and may include any such design based on the use of a code of practice or other relevant technical document;

“regulation” means national building regulation;

“resealing trap” means a trap so designed that some of the water forming its seal is retained during siphonic action to reseal after siphonage has been broken;

“retaining wall” means a wall intended to resist the lateral displacement of materials;

“rodding eye” means an access opening in a drainage installation provided for the purposes of gaining full-bore access to the interior of a drain for internal cleaning, and which remains permanently accessible after completion of the installation, but does not include an inspection chamber or manhole;

“roof assembly” means a building cover and its supporting structure including any ceiling attached to such structure;

“safety distance” means the distance provided between any building and the lateral boundary of the site, or where there are two buildings on the same site, the distance provided between each such building and a notional boundary line between them, so that spread of fire from one building to another due to effect of radiant heat will be minimized;

“safety glass” means a safety glazing material consisting primarily of glass;

“safety glazing material” means any material which complies with the requirements for the performance of safety glazing materials contained in SABS 1263;

“sanitary fixture” means a receptacle to which water is permanently supplied, and from which waste water or soil water is discharged;

“sanitary group” means a combination of sanitary fixtures comprising not more than one each of a WC pan, bath, shower and sink and either two washbasins or one washbasin and one bidet;

“self-closing” in relation to a door, fire-door, shutter or fire-shutter means equipped with a device to ensure immediate closing of such door, fire-door, shutter or fire-shutter after having been opened;

“separating element” means a wall or floor, which shall have a specific fire resistance, used between divisions, occupancies or tenancies in a building;

“septic tank” means a tank designed to receive sewage and to retain it for such a time and in such a manner as to secure adequate decomposition;

“service pipe” means any pipe which is part of a water installation and which is connected to any communication pipe;

“sewage” means waste water, soil water, industrial effluent and other liquid waste, either separately or in combination, but does not include stormwater;

“sewer” means a pipe or conduit which is the property of or is vested in the local authority and which is used or intended to be used for the conveyance of sewage;

“single-stack system” means a particular one-pipe system in which trap vents are not required in terms of specific criteria set out in Part P;

“site” means any erf, lot, plot, stand or other piece of land on which a building has been, is being or is to be erected;

“soil branch” means a branch discharge pipe which conveys soil water;

“soil fixture” means a sanitary fixture which receives and discharges soil water;

“**soil pipe**” means a discharge pipe which conveys soil water;

“**soil water**” means liquid containing excreta;

“**spiral stairway**” means any succession of tapered treads forming a curved stairway which extends as a single flight from one floor to another and which has a minimum radius of curvature of less than 100 mm;

“**sprinkler system**” means an approved system of piping and sprinkler heads connected to a water supply which when actuated by the effect of fire automatically releases water;

“**stack vent**” means a ventilating pipe connecting to a discharge stack above the highest connected discharge pipe;

“**stairway**” means any part of a building which provides a route of travel between different levels in such building and is formed by a single flight or by a combination of two or more flights and one or more intervening landings;

“**storage tank**” means any tank, other than any tank used for storage of hot water or any cistern serving a WC pan or a urinal, which forms part of a water installation and is used for the storage of water;

“**storey**” means that part of a building which is situated between the top of any floor and the top of the floor next above it, or if there is no floor above it that portion between such floor and the ceiling above it (any mezzanine floor, open work floor, catwalk or gallery being taken to be part of the storey in which it is situated), and in relation to a building —

(a) the ground storey shall be taken as the storey in which there is situated an entrance to the building from the level of the adjoining ground or, if there is more than one such storey the lower or lowest of these;

(b) a basement shall be taken to be any part of the building which is below the level of the ground storey;

(c) an upper storey shall be taken to be any storey of the building which is above the level of the ground storey; and

(d) the height expressed in storeys shall be taken to be that number of storeys which includes all storeys other than a basement;

“**stormwater**” means water resulting from natural precipitation or accumulation and includes rainwater, surface water, subsoil water or spring water;

“**stormwater drain**” means a pipe, conduit or surface channel situated on a site, which is used to convey stormwater to a suitable point of discharge;

“**stormwater sewer**” means a pipe, conduit or channel, owned by or vested in the local authority, which is used for the conveyance of stormwater;

“**street**” means any street, road, thoroughfare, lane, footpath, sidewalk, sub-way or bridge which —

(a) is vested in the local authority; or

(b) the public has the right to use; or

(c) is shown on a general plan of a township filed in a deeds registry or a Surveyor-General’s office and has been provided or reserved for use by the public or the owners of erven in such township;

“**street boundary**”, in relation to a site, means the boundary of such site which abuts any street;

“**structural**” means relating to or forming part of any structural system;

“**structural system**”, in relation to a building, means the system of constructional elements and components of any building which is provided to resist the loads acting upon it and to transfer such loads to the ground upon which the foundation of the building rests;

“**structural wall**” means a wall forming part of any structural system;

“**stub stack**” means a straight 100 mm diameter discharge stack not more than one storey high with a rodding eye at its top;

“**surface fire index**” means a classification awarded to a combustible surfacing material (in excess of 1 mm in thickness) when tested in accordance with SABS 0177: Part III;

“**suspended ceiling**” means any ceiling supported on a system of hangers;

“**tapered tread**” means a tread which has a greater width at one side than at the other and a going which changes at a constant rate throughout its length;

“**temporary building**” means any building that is so declared by the owner and that is being used or is to be used for a specified purpose for a specified limited period of time, but does not include a builder’s shed;

“**the Act**” means the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977);

“**toughened glass**” means a glass produced by subjecting annealed glass to a process of heating and rapid cooling which produces high compression in the surface and compensating tension in the interior;

“**trained plumber**” means any person who in the trade of plumbing has, in terms of the Manpower Training Act, 1981 (Act No. 56 of 1981), passed a qualifying trade test or has been issued with a certificate of proficiency;

“**trap**” means a pipe fitting or a part of a sanitary fixture which is designed to retain a water seal;

“**trap vent**” means a ventilating pipe connecting an individual trap to the open air or to another ventilating pipe;

“**travel distance**” means —

a) the distance, in any building where emergency routes are required, from the furthest point in any room in such building to an access door; or

b) where no emergency routes are required, the distance from the furthest point in any room in a building to an escape door;

“**tread**” means the upper surface of a step;

“**two-pipe system**” means a system of piping between sanitary fixtures and a drain in which waste water and soil water discharge through separate discharge pipes and in which any trap venting or other venting that is required is via separate ventilating pipes for the waste and soil water systems;

“**unit fire load**” means the fire load of a compartment or division divided by the floor area of such compartment or division, and is expressed either as timber equivalent (kg/m^2) or heat energy value per m^2 (MJ/m^2);

“**unprotected steel**” means structural steel which is not protected with fire resistant material against the effect of fire;

“**vent**” means a ventilating pipe;

“**ventilating pipe**” means a pipe which leads to the open air at its highest point and which provides ventilation throughout a drainage installation for the purpose of preventing the destruction of water seals, but does not include a discharge pipe;

“**vent stack**” means a main vertical ventilating pipe of any part of a drainage installation;

“**vent valve**” means a one-way air valve specifically designed and constructed to be fitted near the crown of the trap serving a waste fixture to protect the water seal of such trap against excessive negative air pressure arising in the fixture discharge pipe;

“**vertical**”, in relation to a discharge pipe or ventilating pipe, means inclined at 45° or more to the horizontal, and in relation to a glass pane means installed at any angle between 60° and 90° to the horizontal, both figures being inclusive;

“**waste branch**” means a branch discharge pipe which conveys waste water only;

“**waste fixture**” means a sanitary fixture from which waste water is discharged;

“**waste pipe**” means a discharge pipe which conveys waste water only;

“**waste water**” means used water not contaminated by soil water or industrial effluent and shall not include stormwater;

“**water fitting**” means any component, other than a pipe, of any water installation, through which water passes or in which it is stored;

“**water installation**” means an installation used or intended to be used for the conveyance or storage of water in any building or on any site on which such building is situated and includes any pipe or any water fitting other than any water meter vested in the local authority;

“**water seal**” means the water in a trap which acts as a barrier against the flow of any foul air or gas;

“**water supply system**” means any system of structures, aqueducts, pipes, valves, pumps, meters or other appurtenances relating thereto which are vested in the local authority and are used or intended to be used by it in connection with the supply of water;

“**wind load**” means the force exerted by the action of wind;

“winder” means any tapered tread that has a minimum going of less than 50 mm and which is used in conjunction with non-tapered treads in a single flight;
 “wired glass” means annealed glass containing a wire mesh which is completely embedded in the body of the glass during manufacture;
 “zone of space”, in relation to an opening in an external wall or a portion of such an opening, means a volume of open air outside such opening.

2.2 Where in the code reference is made to a SABS number, such reference shall relate to a document bearing the number and title given in the following table:

1	2	3	4
SABS No.	Title	Government Notice Number	Date
28	Metal ties for cavity walls	463	1982-07-29
		358	1987-02-20
193	Fire-dampers	463	1982-07-09
241	Water for domestic supplies	463	1982-07-09
		2828	1985-12-20
248	Bituminous damp-proof courses	463	1982-07-09
298	Mastic asphalt for damp-proof courses and tanking	463	1982-07-09
497	Glazed ceramic sanitaryware	463	1982-07-09
543	Fire hose reels (with hose)	463	1982-07-09
		2329	1985-10-18
		1022	1987-05-08
563	Stress-graded softwood general structural timber	463	1982-07-09
		358	1987-02-20
653	Softwood brandering and battens	463	1982-07-09
810	Portable rechargeable dry powder fire extinguishers	463	1982-07-09
		2329	1985-10-18
876	Glued laminated timber structural members	463	1982-07-09
889	Portable fire extinguishers (water types)	463	1982-07-09
952	Polyolefin film for damp-proofing and waterproofing in buildings	463	1982-07-09
		1264	1986-06-14
974	Rubber joint rings (non-cellular)	463	1982-07-09
		149	1985-02-01
		358	1987-02-20
1089	SA pine stock glued laminated timber (stocklam).....	463	1982-07-09
1125	Room air conditioners	463	1982-07-09
1128	Fire fighting equipment		
	Part I	463	1982-07-09
		1264	1985-06-14
		1022	1987-05-08
	Part II	463	1982-07-09
		659	1982-09-17
		1264	1985-06-14
1151	Portable fire extinguishers of the halogenated hydrocarbon type	463	1982-07-09
		2329	1985-10-18
1186	Symbolic safety signs	463	1982-07-09
		659	1982-09-17
		149	1985-02-01
		1264	1985-06-14
		1584	1986-08-01
1245	Stress-graded softwood engineering timber	463	1982-07-09
		358	1987-02-20
1253	Fire door assemblies	463	1982-07-09
		355	1983-05-20
1263	Safety and security glazing materials for buildings		
	Part I	463	1982-07-09
		1584	1986-08-01
		2190	1986-10-24
1372	Prefabricated concrete components for fences	352	1983-05-20
1390	Steel fencing for private swimming pools	352	1983-05-20
05	Preservative treatment of timber	463	1982-07-09
082	Timber buildings	463	1982-07-09
087	Handling, storage, and distribution of liquefied petroleum gas in domestic, commercial, and industrial installations		
	Part III	463	1982-07-09
		151	1985-02-01
	Part VII	463	1982-07-09

1	2	3	4
SABS No.	Title	Government Notice Number	Date
089	Code of practice for the petroleum industry		
	Part III	463	1982-07-09
0100	Structural use of concrete		
	Part I	463	1982-07-09
		6	1986-01-03
	Part II	463	1982-07-09
0104	Hand and guard rails (safety aspects)	463	1982-07-09
0105	The classification, use, and routine maintenance of portable fire extinguishers	463	1982-07-09
0106	Solar water heaters	463	1982-07-09
0114	Interior lighting		
	Part I	463	1982-07-09
0124	Application of certain soil insecticides for the protection of buildings	463	1982-07-09
0131	The storage and handling of liquid fuel		
	Part II	463	1982-07-09
		2634	1984-11-30
	Part III	552	1982-08-13
0134	The safeness of private swimming pools	463	1982-07-09
0137	The installation of glazing materials	151	1985-02-01
0139	The prevention, automatic detection and extinguishing of fire in buildings	463	1982-07-09
0140	Identification colour marking		
	Part III	463	1982-07-09
0145	Concrete masonry construction	463	1982-07-09
0160	General procedures and loadings to be adopted for the design of buildings	463	1982-07-09
0161	The design of foundations for buildings	463	1982-07-09
		151	1985-02-01
		2311	1985-10-18
		936	1986-05-16
0162	The structural use of steel	2639	1984-11-30
		936	1986-05-16
0163	The design of timber structures		
	Part I	463	1982-07-09
0164	The structural use of masonry		
	Part I	463	1982-07-09
		1584	1986-08-01
		1878	1987-09-04
0177	Fire testing of materials, components, and elements used in buildings		
	Part II	463	1982-07-09
	Part III	463	1982-07-09
		936	1985-05-16
	Part IV	463	1982-07-09
	Part V	463	1982-07-09
0400	The application of the National Building Regulations	2484	1990-10-26

NOTE: The list of standards given in this table was correct on 26 October 1990.

3. **COMPLIANCE WITH REGULATIONS**

3.1 **GENERAL.** This section of the code contains rules that in each case represent a way of satisfying the relevant national building regulation where such regulation is a functional regulation, i.e. compliance with the rule will be deemed to satisfy the regulation. The section has therefore been divided into the same parts as the National Building Regulations and for ease of reference all the regulations in each part have been reproduced whether or not they have a “deemed-to-satisfy” rule associated with them.

These regulations have been numbered in exactly the same way as they are numbered in the copy of the Government Gazette in which the National Building Regulations were published. Where “deemed-to-satisfy” rules exist they follow immediately after the regulations to which they apply. The rules have been numbered consecutively in each part, the number being preceded by a duplicated use of the Part identification letter, i.e. the rules in Part K of the regulations, for example, are numbered KK1, KK2, KK3, etc.

In certain cases the regulations or the “deemed-to-satisfy” rules have been followed by a commentary. It is important to note that this commentary does not form part of either the regulations or the “deemed-to-satisfy” rules and has been included only for the purpose of clarifying the interpretation of the regulations or rules or to add useful background information.

NOTE. In order to distinguish clearly between regulations, “deemed-to-satisfy” rules and commentary, the regulations have been printed in smaller type against a background of colour and do not occupy the full width of the page. The “deemed-to-satisfy” rules are full-page width and printed in normal type while the commentary is in italics and preceded in each case by the word “commentary”.

PART A ADMINISTRATION

REGULATIONS

A1 APPLICATION

(1) The designing, planning and the supervision of the erection of any building or structure or the performance of any function in connection therewith in terms of these regulations is subject to the provisions of any law in terms of which the person undertaking such work or performing such function is required to be registered as an architect in terms of the Architects' Act, 1970 (Act No. 35 of 1970), or to have a specified qualification, certificate, status or other attribute or to have had experience or training of a specified nature or for a specified period.

(2) The plans and particulars in respect of any building to be erected by or on behalf of the State shall be accompanied by a certificate, signed by the head of the State Department concerned or an officer designated by him, setting out in full details as to the respect in which such erection will not comply with the requirements of these regulations.

(3) No person shall erect any building which is to be supported by an existing building or extend an existing building unless a professional engineer or other approved competent person has judged the existing building to be capable of carrying any additional load arising from such erection or extension and has, in writing, so informed the local authority.

(4) No plans, particulars or approval shall be required for any repair which has become necessary as a result of ordinary wear and tear or which is undertaken in the normal course of maintenance or upkeep of any building: Provided that where such repair will affect the structural loading or is a repair of any part of the structural system the local authority may require drawings or specifications to be submitted.

(5) An application shall be made to the building control officer for authorization to erect any building defined as minor building work or to carry out any work falling within the ambit of such definition, and any such erection or work shall not be commenced before such authorization has been granted: Provided that such application and such authorization shall not be required for minor building work for which, in terms of the proviso to regulation A2(1), no plans are required.

(6) Minor building work shall comply with any national building regulations specified as a condition of the authorization granted by the building control officer.

(7) (a) Where in any application the owner of any building has declared such building to be a temporary building, the local authority shall, before granting provisional authorization in terms of regulation A23, assess such building in relation to —

- (i) the intended use and life of the building;
- (ii) the area in which it is to be erected; and
- (iii) the availability of suitable materials from which it may be constructed.

(b) Any stall or other similar building to be erected as part of an exhibition shall be deemed to be a temporary building: Provided that where such stall is to be erected inside any exhibition hall the owner of such hall shall not be required to submit to the local authority any details of such stall: Provided further that such owner shall submit to the local authority a layout plan of all stalls within such hall, showing the location of each individual stall and all aisles, passageways, escape routes and fire fighting equipment.

(c) Any incremental house shall in the application of these regulations in any intermediate stage of erection be deemed to be a temporary building.

(d) Where any building contemplated in paragraph (a) is intended to be used for experimental, demonstration, testing or assessment purposes, the local authority —

- (i) shall grant authorization for a period of time sufficient for the erection of such building and for the performance of any experiment, or for the demonstration, testing or assessment of such building; and
- (ii) shall grant authorization for the erection of such building where testing or assessment of the completed building is the only way to ascertain whether such building complies with the requirements of these regulations.

(8) Where an application is made to make an alteration or addition to any building, approval for the erection of which was granted before the date of commencement of the Act —

(a) such alteration shall comply with the requirements of the Act, but consequent changes to any other part of the building which would be necessary in order to make such other part comply with the requirements of the Act shall not be required unless in the opinion of the local authority such consequent changes are necessary to ensure the health or safety of persons using the building in the altered form;

(b) such addition shall comply with the requirements of the Act but no changes to the original building shall be required unless the addition —

(i) will affect the structural strength or stability of the original building;

(ii) will render any existing escape route from the original building less effective; or

(iii) will affect the health of persons using the original building.

(9) Where in terms of these regulations an obligation is imposed or may be imposed on the owner of any building or land to do or refrain from doing any particular act or thing, and —

(a) such owner and some other person have lawfully agreed, in writing, that such other person shall accept such obligation on behalf of such owner; and

(b) such owner has, where required by the local authority, furnished the local authority with written proof of the fact contemplated in paragraph (a) and with the name and address of such other person,

any reference in any such regulation to such owner shall be construed as a reference to such other person: Provided that such owner shall not be relieved of such obligation where such other person does not adhere to the agreement contemplated in paragraph (a).

A2 PLANS AND PARTICULARS TO BE FURNISHED

(1) Any person intending to erect any building shall submit to the local authority the following plans and particulars, together with the application:

(a) A site plan;

(b) layout drawings;

(c) a fire installation drawing;

(d) drainage installation drawing;

(e) particulars of any existing building which is to be demolished and details of the method of demolition to be used;

(f) such plans and particulars as may be required by the local authority in respect of —

(i) general structural arrangements, subject to any requirement contained in these regulations with regard to design of the structural system;

(ii) general arrangement of artificial ventilation;

(iii) a fire protection plan;

(iv) any certificate contemplated in these regulations; and

(v) any other particulars:

Provided that —

(aa) such plans and particulars shall not be submitted where —

(i) as a result of any exemption contemplated in paragraph (a) or (b) of the proviso to section 2(4) of the Act, it is not necessary to do so;

(ii) an exemption has been granted by a building control officer in terms of section 13 of the Act; or

(iii) any minor building work is a building having an area of not more than 5 m² or is a pergola, wire fence or an open-sided fabric covered shelter for a car, caravan or boat;

(bb) in the case of any temporary building, only such plans and particulars as are contemplated in regulation A23 shall be submitted.

(2) A certified copy of any approved plans and particulars contemplated in subregulation (1) shall be available at the site where any building is being erected until a certificate of occupancy has been issued by the local authority.

(3) (a) Where design work for the proposed erection of any building was commenced and significantly progressed before the date of coming into effect of these regulations and an application in respect of such erection has not been made prior to such date, the owner of the building, or a person authorised by the owner, may notify the local authority that such design work was so commenced and has so progressed.

(b) Subject to the provisions of this subregulation, an application in respect of an erection which has been the subject of a notification contemplated in paragraph (a) shall, if so requested by the owner, be dealt with by the local authority in accordance with the provisions of the building regulations or by-laws in force immediately before such date.

(c) Any notification contemplated in paragraph (a) shall —

(i) be submitted by registered post within 90 days of the coming into effect of these regulations;

(ii) contain the name and address of the owner, the address of the site of the building concerned, the date of commencement of such design work and a description of the proposed erection and its intended use; and

(iii) be accompanied by such evidence as may be required by the local authority to satisfy it that such design work was commenced on the date contemplated in subparagraph (ii) and has after that date significantly progressed.

(d) The local authority shall, in writing, inform the owner concerned whether such notification complies with this subregulation.

(e) The provisions of paragraph (b) shall not apply in respect of any application which is made to the local authority more than 24 months after the date that the local authority informs the owner that it is so satisfied: Provided that the local authority may extend such period if it thinks it reasonable or necessary.

(f) Any person who gives false or misleading information in a notification in terms of this subregulation shall be guilty of an offence, and any such notification shall be null and void.

A3 PRELIMINARY PLANS AND ENQUIRIES

(1) Any person who intends to erect a building may, before submitting an application in accordance with the Act, request the local authority —

(a) to examine any preliminary sketch plans of the building proposed to be erected and to, in writing, furnish its comments on such plans or on any particular features thereof specified by such person; or

(b) to furnish, in writing, its opinion as to whether any material or method or form of construction intended to be used in the erection of such building will comply with these regulations.

(2) Where the local authority is unable to comply with any request contemplated in subregulation (1) it shall furnish, in writing, its reasons for its inability to do so.

A4 LOCAL AUTHORITY MAY REQUIRE ADDITIONAL DOCUMENTS AND INFORMATION

(1) Where the local authority requires the applicant in terms of regulation A2(1)(f)(i) or (ii) to submit structural details or artificial ventilation details such applicant shall, to the extent required by the local authority —

(a) furnish the local authority with a structural arrangement drawing which shall show the position, level and size of every structural member;

(b) furnish the local authority with such structural drawings and artificial ventilation details as required in terms of subregulations (2), (3), (4), (5), (6), (7) and (8): Provided that where the structural system or artificial ventilation system, as the case may be, is designed by a professional engineer or other approved competent person —

(i) the local authority shall permit the applicant to omit from his application any or all of the details required in subregulations (2), (3), (4), (5), (6), (7) and (8) on condition that the required details shall be submitted to the local authority at least three days, exclusive of a Saturday, Sunday or public holiday, prior to the commencement of the erection of the structural system of the building or the artificial ventilation system, as the case may be; and

(ii) such details shall thereafter form part of the relevant application for approval;

(c) show on structural drawings the imposed floor loads which such building has been designed to withstand;

(d) furnish for inspection the calculations employed in the design of the building proposed to be erected;

(e) furnish adequate information regarding the subsoil of the site on which the building is proposed to be erected;

(f) show the fire resistance ratings of the various structural members of the building and, where special protection for such members is necessary, details relating to such protection;

(g) furnish information regarding structural materials to be used in the construction of the proposed building, including the grade, strength, classification, temper or treatment;

(h) if the design or part thereof has been carried out in accordance with any code of practice contemplated in these regulations, furnish the name and number of such code of practice;

(i) if the design or part thereof has been carried out in accordance with a document other than a code of practice contemplated in these regulations, furnish identification of such document together with the reasons for utilizing such document in preference to such code of practice;

(j) if the design or part thereof has not been carried out in accordance with any code of practice or document contemplated in paragraph (h) or (i), furnish the basis and method on which such design was prepared and any further evidence of the adequacy of such basis and method; and

- (k) if the structural design or part thereof has been carried out in accordance with any code of practice, document or other method contemplated in paragraph (h), (i), or (j), furnish, in addition to the loads contemplated in paragraph (c), details of other loads which such building has been designed to withstand.
- (2) The documentation for the structural concrete used in a building shall, to the extent required by the local authority, show —
- (a) the reinforcement in each member;
 - (b) the various grades of concrete to be used;
 - (c) the type of reinforcement or prestressing tendon;
 - (d) the amount of concrete cover to be provided to the reinforcement;
 - (e) the details of all joints between members; and
 - (f) the details of anchorage of prestressing steel.
- (3) The documentation for structural steelwork shall, to the extent required by the local authority, show —
- (a) the grades of steel of all members;
 - (b) details of connections between members; and
 - (c) details of the corrosion protection to be provided to the steel structure.
- (4) The documentation for structural timber shall, to the extent required by the local authority, show —
- (a) the grade and type of timber to be used in such construction;
 - (b) whether the sizes of timber members are nominal or finished sizes;
 - (c) the method of connection of all timber members and the connection of any timber members to a foundation or other parts of the building not constructed of timber;
 - (d) in the case of any roof construction, the details of the method of bracing to resist wind forces and other lateral forces, member spacing and sizes and details of connections;
 - (e) details of treatment applied or to be applied in terms of these regulations, to the structural timber members; and
 - (f) details of drainage for condensation or wind driven water from any cavity and the details of any ventilation openings provided to such cavity.
- (5) The documentation for structural masonry shall, to the extent required by the local authority, show —
- (a) the grade of mortar to be used, together with the strength of the masonry units;
 - (b) the details of all joints in masonry and between masonry and other members, including dimensions and materials from which bearing pads and load spreading devices are made; and
 - (c) details of all reinforcement, wall ties and anchors.
- (6) The documentation for foundations shall, to the extent required by the local authority, show —
- (a) the type and condition of the soil; and
 - (b) the design loads to be applied to the foundations, except where such foundation is constructed in accordance with any relevant empirical rule and such construction is deemed to satisfy these regulations.
- (7) The documentation for other structural materials shall, to the extent required by the local authority, show —
- (a) the overall size of every structural member together with its location;
 - (b) the grade of material of all members;
 - (c) the details of all connections between members;
 - (d) the details of the corrosion protection to be provided; and
 - (e) the details of reinforcement provided, including its strength and composition.
- (8) (a) Where the local authority requires any particulars with regard to the artificial ventilation of any building by a mechanical apparatus not being a room air conditioner contemplated in SABS 1125, or any portable electric fan, the following information shall, to the extent required by the local authority and subject to the requirement of paragraph (b), be submitted:
- (i) The location and size of any plant room;
 - (ii) the location and size of principal air ducts, plenums, inlets and outlets;
 - (iii) the proposed rates of air supply or extraction; and
 - (iv) details of any water recirculation system, cooling tower and storage tank.
- (b) Any documentation contemplated in paragraph (a) shall be accompanied by a certificate signed by a professional engineer or other approved competent person in which he shall certify that any apparatus to be installed has been designed to provide a standard of ventilation which complies with these regulations.
- (9) (a) Where a local authority is not satisfied as to the adequacy or safety in use of any construction system, method, material, article or product which is proposed to be used in the erection of any building the local authority may require a test report or evaluation certificate in respect thereof.
- (b) On submission to such local authority of —
- (i) an applicable report issued by the council or the CSIR; or

(ii) any current certificate issued by the Agrément Board of South Africa, the adequacy or safety of such system, method, material, article or product covered by such report or certificate shall be deemed to satisfy any relevant requirement for adequacy or safety prescribed in these regulations, to the extent and under the conditions set out in such report or certificate.

(c) A report or certificate contemplated in paragraph (a), issued on or after the date of coming into operation of these regulations, shall contain the number of the regulation which prescribes such requirement.

A5 APPLICATION FORMS AND MATERIALS, SCALES AND SIZES OF PLANS

(1) Any application form shall be dated and signed in black ink by the owner.
 (2) Any application shall be accompanied by at least one set of plans, drawings and diagrams which shall —

- (a) be clear and legible;
- (b) be drawn on white linen, white plastic or other suitable material;
- (c) contain the name of the owner of the site concerned; and
- (d) be dated and signed in black ink by the owner; and every subsequent alteration shall be likewise dated and signed.

(3) Any application shall be accompanied by as many additional paper copies of every plan, drawing or diagram as required by the local authority.

(4) Such plans, drawings, diagrams, and any copies thereof, shall be on sheets of the A series of sizes or multiples of A4.

(5) (a) Plans, drawings and diagrams shall be drawn to a suitable scale selected from one of the following scales:

- (i) Site plans:
1:1 000, 1:500, 1:300, 1:200 or 1:100.
- (ii) Plumbing installation drawings:
1:200, 1:100 or 1:50.
- (iii) Layout drawings:
1:100, 1:50 or 1:20: Provided that in the case of elevations 1:200 may be used.
- (iv) General structural arrangement drawings and structural details:
1:100, 1:50, 1:20, 1:10, 1:5, 1:2 or 1:1.
- (v) Fire protection plans:
1:200, 1:100, 1:50 or 1:20.

(b) The local authority may in circumstances deemed exceptional by it, accept a scale not provided for in this subregulation.

(6) (a) One copy of the plans and drawings contemplated in subregulation (2) shall, for the convenience of the local authority, be coloured as indicated below: Provided that this requirement shall not apply in the case of any layout, structural or detail drawing of a new building where materials are identified in another suitable manner:

Material	Colour (in plan or section)
(i) New masonry	Red
(ii) New concrete	Green
(iii) New iron or steel	Blue
(iv) New wood	Yellow
(v) New glass	Black
(vi) Existing materials (all materials)	Grey
(vii) All other new materials	To be clearly indicated in colours other than the above.

(b) Site plans shall be coloured as follows:

- (i) Proposed work
 Red |
- (ii) Existing work
 Not coloured |
- (iii) Work to be demolished
 Drawn with black dotted lines. |

(7) On one copy of the drainage installation drawing contemplated in regulation A2(1)(d), the drainage installation shall be coloured in accordance with the following:

- (a) Drains and soil pipes
 Brown |
- (b) Waste pipes
 Green |
- (c) Soil and combined vents
 Red |
- (d) Waste vents
 Blue |
- (e) Pipes for the conveyance of
industrial effluent
 Orange |
- (f) Existing drains
 Black |
- (g) Stormwater drains
 Not coloured. |

(8) The escape route drawn on any fire protection plan shall be coloured green and the direction of travel to a safe area shall be indicated by arrows drawn at short intervals along the plan route.

(9) In all cases the scales employed shall be stated on the plans and drawings, and the letters and symbols used on such plans and drawings shall be not less than 2 mm in size in the case of upper case letters.

A6 SITE PLANS

Any site plan contemplated in regulation **A2(1)(a)** shall fully and clearly contain the following information, where applicable:

- (a) (i) The dimensions of the site on which the building is to be erected;
- (ii) the boundaries of such site;
- (iii) the dimensioned position of any building line; and
- (iv) the position and width of any servitude or right of way to which such site is subject;
- (b) the registered number or other designation of such site;
- (c) the direction of true north, and if required by the local authority, the natural ground contours at suitable vertical intervals or spot levels at each corner of such site;
- (d) the name of the street upon which such site abuts;
- (e) the location of —
 - (i) any municipal service and any connection point thereto; and
 - (ii) any drain, stormwater drain, or surface channel existing upon such site;
- (f) the location of —
 - (i) the proposed building;
 - (ii) any existing building; and
 - (iii) any building proposed to be demolished;
- (g) (i) any existing and intended point of access from any public street; and
 - (ii) the location of any street tree, street furniture, apparatus or equipment relative to such access.

A7 LAYOUT DRAWING

Any layout drawing contemplated in regulation **A2(1)(b)** shall indicate the occupancy classification and shall consist of as many plans, sections and elevations and such other details as may be necessary to show —

- (a) foundations, floors, walls, fixed and openable windows, fanlights, louvres and other ventilating devices, artificial ventilation systems including any cooling tower or plantroom, doors, stairs, roofs and chimneys;
- (b) sanitary fixtures;
- (c) structural members required in terms of regulation **A4(1)(a)**;
- (d) the intended use and horizontal and vertical dimensions of rooms or other spaces;
- (e) where fixed seating is provided —
 - (i) the layout of all rows, seats and aisles;
 - (ii) the position of all exit doors; and
 - (iii) the total number of seats;
- (f) details of the position, dimensions and materials of damp-proofing;
- (g) the location, levels and size of any paved areas adjacent to the building;
- (h) where required by the local authority, contours of the site and the levels of any adjoining verge of any roadway, together with a section along the length of any vehicle driveway, which shall show the relative levels and gradients;
- (i) where required by the local authority, the levels of the floors relative to one another and to —
 - (i) the existing ground surface;
 - (ii) the proposed finished ground surface;
 - (iii) the surface of any public place or public street at the boundary of the site; and
 - (iv) all street levels supplied in terms of regulation **A12**;
- (j) stormwater drainage on the site, where such drainage is required by the local authority; and
- (k) details of any special provisions, required in terms of these regulations, for disabled persons.

A8 PLUMBING INSTALLATION DRAWINGS AND PARTICULARS

(1) (a) The provisions of regulation **A2(1)(c)** and **A2(1)(d)** shall not be construed as preventing the details contemplated in subregulations (2), (3), (4) and (5) being clearly indicated on any layout drawing required in terms of regulation **A2(1)(b)**.

(b) Where such details on more than one floor of any building are identical they may be indicated on the drawings of one such floor only: Provided that where such details are so indicated the drawings of other floors concerned shall be suitable annotated to indicate where such details may be found.

- (2) Any drawing of a fire installation as contemplated in regulation A2(1)(c) shall contain as many plans, sections and elevations as may be necessary to show, where relevant, the following:
- (a) The location and size of any existing or proposed communication pipe serving or intended to serve any building or site;
 - (b) the location of any pipe, the size of such pipe and the material of which it is manufactured;
 - (c) the location and capacity of any storage tank;
 - (d) the location of any overflow;
 - (e) the location of any pump; and
 - (f) the pressure for which the installation has been designed.
- (3) Any drawing of a drainage installation as contemplated in regulation A2(1)(d) shall contain as many plans, sections and elevations as may be necessary to show, where relevant the following:
- (a) The location, size and gradient of any drain and any connecting point to such drain, in relation to a datum established on the site and the level of the ground relative thereto;
 - (b) the location of any point of access to the interior of any drain;
 - (c) the location of any trapped gully;
 - (d) the location and details of any septic tank, conservancy tank, private sewage treatment plant or sewage pump;
 - (e) the location of any percolation test hole excavated on the site and of any french drain;
 - (f) the location and arrangement of any sanitary fixture served by the drainage installation;
 - (g) the location and size of any soil pipe, waste pipe and ventilating pipe or device;
 - (h) the location of all openings in the building such as chimneys, skylights, doors, windows, ventilation openings and air intakes which could permit the entry of foul air or gas into such building from any ventilating pipe or device; and
 - (i) the location of any well, borehole or watercourse on the site.
- (4) The local authority may require the owner to submit —
- (a) drainage design calculations which shall clearly indicate the basis for such design;
 - (b) an estimate of the composition and quantity of any industrial effluent proposed to be discharged into any sewer; and
 - (c) where approval has been given in terms of the local authority's industrial effluent by-laws or regulations for the discharge into a sewer of industrial effluent from the site, plans and particulars of any drainage works and installations required by the local authority in terms of its conditions of approval for such discharge.
- (5) Where symbols are used to signify details on drainage installation drawings, they shall be as indicated in the following list: Provided that where there may be a possibility of misunderstanding, the description shall be written in full:

Access opening	— AO	Rainwater pipe	— RWP
Bath	— B	Reinforced concrete	— RC
Bidet	— BT	Rodding eye	— RE
Cast iron	— CI	Shower	— SW
Cleaning eye	— CE	Sink	— S
Concrete	— CONC	Slop hopper	— SH
Copper	— COP	Soil pipe	— SP
Cover level	— CL	Stainless steel	— SS
Fibre cement	— FC	Stormwater channel	— SC
Galvanized mild steel	— GMS	Stormwater pipe	— SWP
Grease trap	— GT	Unplasticized polyvinyl chloride	— uPVC
Ground level	— GL	Urinal	— U
Gully	— G	Vent or ventilating pipe	— VP
Inspection chamber	— IC	Vitrified clay	— VC
Inspection eye	— IE	Wash-basin	— WB
Invert level	— IL	Wash-trough	— WT
Manhole	— MH	Waste pipe	— WP
Pitch-impregnated fibre	— PF	WC pan	— WC.

A9 FIRE PROTECTION PLAN

(1) Where so required by the local authority, any application in respect of the erection of any building not being a dwelling house, shall be accompanied by a fire plan which shall clearly show any fire protection measures provided in terms of these regulations.

(2) The provisions of subregulation (1) shall not be construed as preventing details of such fire protection measures being clearly indicated on a layout drawing required in terms of regulation A2(1)(b).

A10 SYMBOLS ON FIRE PROTECTION PLANS

Where symbols are used to signify details on fire protection plans they shall be as indicated in the following list: Provided that where the possibility of a misunderstanding exists, the description shall be written in full:

Fire extinguisher	— FE
Fire hydrant	— FH
Foam inlet	— FI
Fire main	— FM
Fire pump connection	— FPC
Fire stopping	— FS
Heat detectors	— HD
Hose reel	— HR
Rising main	— RM
Reflux valve	— RV
Smoke detectors	— SD
Sprinkler system	— SS
Smoke extractor	— SX
Valve	— V .

A11 POINTING OUT OF BOUNDARY BEACONS

(1) Where, in the opinion of the local authority, the location of any boundary of a site has not been accurately determined such local authority may, before granting approval in respect of any application, require the owner, at his own cost, to engage a professional land surveyor and to submit to the local authority a certificate, in an approved form and signed by such professional land surveyor —

(a) identifying the boundary pegs or beacons of such site; and

(b) stating the name of the nearest cross street and the approximate distance of the nearest boundary of the site from such street.

(2) Where such owner fails to engage a professional land surveyor as contemplated in subregulation (1) the local authority may engage a professional land surveyor to establish and point out the location of such pegs or beacons, and the local authority may recover the costs of such establishing and pointing out from such owner.

A12 STREET LEVELS

(1) Where any building is to be erected on a site abutting a constructed street the owner of such building shall, subject to the requirements of subregulation (3), erect such building in accordance with the levels of such street.

(2) (a) Where any portion of any street abutting the site on which any building is to be erected has not been constructed the owner of such building shall request, in writing, from the local authority the levels at which such portion of the street is intended to be constructed.

(b) The local authority shall, where in its opinion it is practicable for it so to do and within 21 days after receipt of a request contemplated in paragraph (a), supply the required levels.

(c) If the local authority is unable to comply with the provisions of paragraph (b) it shall notify such owner, in writing, to that effect.

(3) Where any street has been constructed, but in the opinion of the local authority is likely to be reconstructed at levels different from its existing levels, the local authority shall give notice of such fact to such owner, and in such notice it shall, if possible, supply the levels at which such portion of such street will be reconstructed.

A13 BUILDING MATERIALS AND TESTS

(1) (a) Material used in the erection of a building shall be of a quality adequate for the purpose for which it is to be used.

(b) Where structural timber is treated against termite and wood borer attack and fungal decay, treatment shall be in accordance with a recognized method and the local authority may require proof of such treatment; and

(c) the requirements of subregulation (1)(a) and (1)(b) shall be deemed to be satisfied if —

(i) such material complies with the standard prescribed for it in the relevant standard specification, or

(ii) such treatment is in accordance with SABS 05, as the case may be.

(2) The local authority may test or cause to be tested any material or component used or to be used in the erection of any building in order to determine whether such material or component complies with the requirements of these regulations, and any officer of such local authority duly authorized for that purpose may, at any time after consultation with the person erecting such building, remove from the building site concerned so much of such material or component as is reasonably necessary to serve as a sample for the purpose of such test: Provided that the authorized officer may not exercise his powers in such a way that work of such erection is stopped when such material or component is being so removed and tested.

(3) If any material or component tested in terms of subregulation (2) does not comply with these regulations the local authority may serve a notice on such person, stating the respects in which such material or component does not comply and prohibiting such person from making further use of such material or component for the purpose for which it was or is to be used in the erection of such building.

(4) Except in the case where in such notice the local authority permits the use of such material or component in the erection of such building for some different purpose permitted in terms of these regulations, such person shall forthwith on receipt of such notice remove such material or component from such building or building site or from both, as the case may be.

(5) If any material or component contemplated in subregulation (2) is tested and has failed to comply with these regulations the local authority may recover the cost of such test from the owner of the building concerned.

(6) Where the owner of any building desires to use for a particular purpose any material or component which is not permitted or prescribed by these regulations to be used for that purpose, and he satisfies the local authority that such material or component is at least as suitable for that purpose as the material or component permitted or prescribed to be used by these regulations, then the local authority shall permit the use of such material or component for the purpose concerned.

A14 CONSTRUCTION

(1) Where construction of any building or element of a building is carried out in compliance with the requirements of any relevant code of practice, such construction shall be deemed to comply with the requirements of these regulations in respect of construction methods and workmanship.

(2) All workmanship in the erection of any building shall be in accordance with sound building practice.

(3) Any building, including any structural element or component thereof, shall be constructed so as to comply with the design requirements of Part B of these regulations.

(4) Where any code of practice or document has been used as a basis for the design of any building, any construction procedure described in such code or document shall be observed in the erection of such building.

(5) Precautions shall be taken during all stages of construction of any building to ensure that the structural system is not damaged or distorted during the course of erection of such building.

A15 INSTALLATIONS MAINTENANCE AND OPERATION

(1) The owner of any building shall ensure that any mechanical equipment or any service installation provided in or in connection with such building, pursuant to these regulations or pursuant to any building by-law which was in operation prior to the coming into operation of the Act, shall be maintained in a safe condition.

(2) Such owner or any person appointed by such owner to be in control of such building shall ensure that where such equipment or installation is designed to be kept operating during the times of normal occupancy of the building it is kept operating in such a manner as to attain any standard of performance prescribed in these regulations or in any by-law contemplated in subregulation (1) for such equipment or installation.

(3) The local authority may serve a notice on such owner or person requiring him to comply with subregulation (1) or (2) within the time specified in such notice.

(4) The local authority may, by notice, in writing to the owner, order the evacuation of such building where the state of such equipment or installation will cause conditions which in the opinion of the local authority may be detrimental to the safety or health of the occupiers or users of such building.

- (5) Any owner or person who contravenes the requirements of subregulation (1) or (2) or fails to comply with any notice served in terms of subregulation (3) or (4) shall be guilty of an offence.

A16 QUALIFICATIONS OF A BUILDING CONTROL OFFICER

The minimum qualification of any building control officer appointed in terms of section 5 of the Act shall be of a standard equivalent to a senior certificate plus 3 years tertiary education, as evaluated by the Human Sciences Research Council, in one of the following building disciplines:

- (a) Civil engineering;
- (b) structural engineering;
- (c) architecture;
- (d) building management;
- (e) building science;
- (f) building surveying; or
- (g) quantity surveying.

A17 CERTIFICATE OF IDENTITY OF A BUILDING CONTROL OFFICER

(1) Any building control officer or any officer contemplated in section 6(4) of the Act shall, when so requested, produce his certificate of identity, which shall contain the following information:

- (a) The number of the Act in terms of which the certificate is issued;
- (b) the name of the local authority in question;
- (c) the name of the officer;
- (d) the signature of the officer;
- (e) the signature of the Town Clerk or Secretary of the local authority concerned;
- (f) the date of issue; and
- (g) a photograph of the officer.

(2) Subregulation (1) shall be deemed to be satisfied where the certificate is of the form shown in the illustration in Appendix 1 to SABS 0400.

(3) The certificate contemplated in subregulation (1) shall be valid only during the period that the officer so identified occupies the post of building control officer or during the period for which any power of a building control officer is delegated to him, as the case may be, and it may at any time be withdrawn by the local authority.

(4) Any person who produces a certificate of identity which has not been lawfully issued to him or which has been lawfully withdrawn, shall be guilty of an offence.

A18 CONTROL OF PLUMBERS AND PLUMBING WORK

(1) No person shall perform the trade of plumbing as contemplated in Government Notice No. R1875 of 31 August 1979 unless he is a trained plumber or works under the adequate control of a trained plumber or approved competent person.

(2) Where any person who is not a trained plumber has been practising the trade of plumbing and was required in terms of any local authority by-law to register with it before so practising in its area of jurisdiction, he may, if he is so registered, continue to practise in such area or the area of any other local authority if such registration is acceptable to such other local authority.

(3) No local authority shall, for the purposes of these regulations, register any person to practise the trade of plumbing after the coming into operation of the Act.

(4) Any person not being a trained plumber or not being a person contemplated in subregulation (2), who practices the trade of plumbing shall be guilty of an offence.

(5) Any trained plumber who causes or permits any person who is not a trained plumber or is not a person contemplated in subregulation (2), to practise the trade of plumbing without adequately controlling the work done by such person, shall be guilty of an offence.

A19 APPOINTMENT OF PERSONS RESPONSIBLE FOR DESIGN

- (1) Where in terms of these regulations a rational design for —
- (a) precautionary measures necessary to ensure the stability of any excavation and of any adjoining property, building, service or street;
 - (b) the structural system of the building;
 - (c) any artificial ventilation system;
 - (d) any drainage installation;
 - (e) any stormwater disposal system;
 - (f) any fire protection system,

is to be submitted to the local authority, the owner of any building shall, except where not so required by the local authority, appoint and retain any person who is a professional engineer or other approved competent person to undertake responsibility for each such design, and also for inspection, during construction, of such precautionary measures, structural system, artificial ventilation system, drainage installation, stormwater disposal system, fire protection system, or water supply system, as the case may be.

(2) Where it is not possible for such person to fulfil his duties as contemplated in subregulation (1), the owner of such building shall appoint some other such person to fulfil such duties.

(3) Such owner shall inform the local authority of the appointment of any person contemplated in subregulation (1) or (2) and shall furnish to such local authority the name and address of such person, a full list of his academic and professional qualifications, evidence of relevant experience and proof of his acceptance of such appointment.

(4) Where so required by the local authority the information contemplated in subregulation (3) shall be on an approved form.

(5) Subregulation (4) shall be deemed to be satisfied where the required information is contained on a form of the type illustrated in Appendix 1 of SABS 0400.

A20 CLASSIFICATION AND DESIGNATION OF OCCUPANCIES

(1) The occupancy of any building shall be classified and designated according to the appropriate occupancy class given in column 1 of Table 1 and such classification shall reflect the primary function of such building: Provided that, in any building divided into two or more areas not having the same primary function, the occupancy of each such area shall be separately classified.

(2) Notwithstanding the requirements of subregulation (1), any area in any building which is used for any purpose ancillary to that of any occupancy classification contemplated in subregulation (1) shall, subject to adequate facilities and safety measures being provided, not be classified as a separate occupancy.

(3) Any room or space used for the storage or processing of flammable liquids shall not be deemed to be a J1 occupancy as herein defined if —

(a) such liquid is stored in the fuel tank of any engine, motor vehicle, boat or lawnmower;

(b) the quantity of liquid to be stored or handled in such room does not exceed 40 litres; or

(c) the quantity contemplated in paragraph (b) exceeds 40 litres but does not exceed 200 litres and the closed cup flash point of such liquid is above 40 °C.

TABLE 1 — OCCUPANCY OR BUILDING CLASSIFICATION

1	2
Class of occupancy or building	Occupancy
A1	<p>Entertainment and public assembly Occupancy where persons gather to eat, drink, dance or participate in other recreation.</p>
A2	<p>Theatrical and indoor sport Occupancy where persons gather for the viewing of theatrical, operatic, orchestral, choral, cinematographical or sport performances.</p>
A3	<p>Places of instruction Occupancy where school children, students or other persons assemble for the purpose of tuition or learning.</p>
A4	<p>Worship Occupancy where persons assemble for the purpose of worshipping.</p>
A5	<p>Outdoor sport Occupancy where persons view outdoor sports events.</p>
B1	<p>High risk commercial service Occupancy where a non-industrial process is carried out and where either the material handled or the process carried out is liable, in the event of fire, to cause combustion with extreme rapidity or give rise to poisonous fumes, or cause explosions.</p>
B2	<p>Moderate risk commercial service Occupancy where a non-industrial process is carried out and where either the material handled or the process carried out is liable, in the event of fire, to cause combustion with moderate rapidity but is not likely to give rise to poisonous fumes, or cause explosions.</p>
B3	<p>Low risk commercial service Occupancy where a non-industrial process is carried out and where neither the material handled nor the process carried out falls into the high or moderate risk category.</p>
C1	<p>Exhibition hall Occupancy where goods are displayed primarily for viewing by the public.</p>
C2	<p>Museum Occupancy comprising a museum, art gallery or library.</p>
D1	<p>High risk industrial Occupancy where an industrial process is carried out and where either the material handled or the process carried out is liable, in the event of fire, to cause combustion with extreme rapidity or give rise to poisonous fumes, or cause explosions.</p>
D2	<p>Moderate risk industrial Occupancy where an industrial process is carried out and where either the material handled or the process carried out is liable, in the event of fire, to cause combustion with moderate rapidity but is not likely to give rise to poisonous fumes, or cause explosions.</p>
D3	<p>Low risk industrial Occupancy where an industrial process is carried out and where neither the material handled nor the process carried out falls into the high or moderate risk category.</p>
D4	<p>Plant room Occupancy comprising usually unattended mechanical or electrical services necessary for the running of a building.</p>
E1	<p>Place of detention Occupancy where people are detained for punitive or corrective reasons or because of their mental condition.</p>
E2	<p>Hospital Occupancy where people are cared for or treated because of physical or mental disabilities and where they are generally bed-ridden.</p>
E3	<p>Other institutional (residential) Occupancy where groups of people who either are not fully fit, or who are restricted in their movements or their ability to make decisions, reside and are cared for.</p>
F1	<p>Large shop Occupancy where merchandise is displayed and offered for sale to the public and the floor area exceeds 250 m².</p>
F2	<p>Small shop Occupancy where merchandise is displayed and offered for sale to the public and the floor area does not exceed 250 m².</p>
F3	<p>Wholesalers' store Occupancy where goods are displayed and stored and where only a limited selected group of persons is present at any one time.</p>

Table 1 (continued)

1	2
Class of occupancy or building	Occupancy
G1	Offices Occupancy comprising offices, banks, consulting rooms and other similar usage.
H1	Hotel Occupancy where persons rent furnished rooms, not being dwelling units.
H2	Dormitory Occupancy where groups of people are accommodated in one room.
H3	Domestic residence Occupancy consisting of two or more dwelling units on a single site.
H4	Dwelling house Occupancy consisting of a dwelling unit on its own site, including a garage and other domestic outbuildings, if any.
J1	High risk storage Occupancy where material is stored and where the stored material is liable, in the event of fire, to cause combustion with extreme rapidity or give rise to poisonous fumes, or cause explosions.
J2	Moderate risk storage Occupancy where material is stored and where the stored material is liable, in the event of fire, to cause combustion with moderate rapidity but is not likely to give rise to poisonous fumes, or cause explosions.
J3	Low risk storage Occupancy where the material stored does not fall into the high or moderate risk category.
J4	Parking garage Occupancy used for storing or parking of more than 10 motor vehicles.

A21 POPULATION

(1) The population of any room or storey or portion thereof shall be taken as the actual population of such room, storey or portion thereof where such population is known or, where such population is not known, the population shall be calculated from the criteria given in Table 2.

(2) In the case of any occupancy classified as F1, where the total floor area is more than 500 m², that portion of the floor area that is in excess of 500 m² shall, for the purposes of calculation of the population, be reduced by an amount of 20 %.

TABLE 2 — DESIGN POPULATION

1	2
Class of occupancy of room or storey or portion thereof	Population
A1, A2, A4, A5	Number of fixed seats or 1 person per m ² if there are no fixed seats
E1, E3, H1, H3	2 persons per bedroom
G1	1 person per 15 m ²
J1, J2, J3, J4	1 person per 50 m ²
C1, E2, F1, F2	1 person per 10 m ²
B1, B2, B3, D1, D2, D3	1 person per 15 m ²
C2, F3	1 person per 20 m ²
A3, H2	1 person per 5 m ²

A22 NOTICE OF INTENTION TO COMMENCE ERECTION OR DEMOLITION OF A BUILDING, AND NOTICES OF INSPECTION

(1) (a) No work in connection with the erection or demolition of any building shall be commenced on the site unless notice, in the form required by the local authority, has been given to such local authority by the owner of such building, stating the date on which such erection or demolition will commence.

(b) Such notice shall in the case of the erection of a building be given at least 4 days, exclusive of a Saturday, Sunday or public holiday, and in the case of the demolition of a building, at least 10 days, exclusive of a Saturday, Sunday or public holiday, before such work commences.

(2) Notice in the form required by the local authority shall be given by the owner to such local authority of a date which shall be at least 2 working days from the date of receipt by it of such notice on which, as the case may be —

(a) any fire installation will be connected to any communication pipe;

(b) trenches or excavations will be ready for inspection prior to the placing of concrete for any foundation; or

(c) any drainage installation will be ready for inspection and testing.

(3) No owner shall construct any foundation until the trenches or excavations have been inspected and approved by the local authority, and such owner shall not backfill or enclose a drainage installation until such installation has been inspected, tested and approved by the local authority: Provided that this requirement shall not apply if such inspection and testing has not been carried out by the end of the working day which has the first date mentioned in subregulation (2).

(4) Any owner who fails to comply with the requirements of this regulation shall be guilty of an offence.

A23 TEMPORARY BUILDINGS

(1) On receipt of any application to erect a building which the applicant has declared to be a temporary building, the local authority may, subject to the provisions of subregulations (2), (3) and (4), grant provisional authorization to the applicant to proceed with the erection of such building in accordance with any conditions or directions specified in such authorization.

(2) Before granting such authorization the local authority may require the submission of —

(a) a statement of the period for which authorization is required;

(b) a site plan;

(c) layout drawings in sufficient detail to enable the local authority to determine the general size, form, materials of construction and use of the proposed building; and

(d) any structural detail required by the local authority to determine the structural safety of the proposed building.

(3) The local authority shall grant the authorization contemplated in subregulation (1) for a limited period, to be determined with regard to the period specified by the applicant.

(4) The local authority may at the request of the owner grant approval for one or more extensions of the period contemplated in subregulation (3): Provided that where it is intended that the public should have access to such building each such request shall be accompanied by a certificate signed by a professional engineer or other approved competent person, indicating that the condition of the structural system is satisfactory.

(5) The owner of such building may, not later than the last day of the period contemplated in subregulation (3), submit to the local authority such additional plans and details as required by the local authority in order to consider an application in terms of section 4 of the Act.

(6) Where such local authority has granted approval in respect of an application contemplated in subregulation (5) the owner shall submit to the local authority an affidavit stating that any part of such building erected in terms of the provisional authorization has been erected in accordance with the plans and details contemplated in subregulation (5).

(7) If any plans and details contemplated in subregulation (5) have not been submitted to such local authority or if such local authority has refused to grant approval in respect thereof, the owner shall forthwith remove or demolish such building.

A24 STANDARDIZATION OF INTERPRETATION

(1) Where so requested, in writing, by any local authority, the owner of any building or any person with an interest in such building, the council may examine the plans, specifications or other documents which accompanied or which are intended to accompany any application to the local authority in question,

perform any tests that it considers necessary and inspect the site on which such building is to be erected, and issue a report in connection therewith.

(2) Where the council finds that the proposed building complies with all the relevant requirements of these regulations it shall report accordingly, and any application for approval to erect such building, where accompanied by such report, shall be deemed to satisfy the requirements of the Act: Provided that such report shall clearly identify any plans, specifications or other documents which have been examined by the council.

A25 GENERAL ENFORCEMENT

(1) No person shall use any building or cause or permit any building to be used for a purpose other than the purpose shown on the approved plans of such building, or for a purpose which causes a change in the class of occupancy as contemplated in these regulations, whether such plans were approved in terms of the Act or in terms of any law in force at any time before the date of commencement of the Act, unless such building is suitable, having regard to the requirements of these regulations, for such first-mentioned purpose or for such changed class of occupancy.

(2) Any person who contravenes a provision of subregulation (1) shall be guilty of an offence, and the local authority may serve a notice on such person calling upon him forthwith to cease such contravention.

(3) Where the erection of any building was completed before the date of commencement of the Act and such erection was in contravention of the provisions of any law in force before such date, the local authority may take any action it may have been competent to take in terms of such law.

(4) Where any building was being erected before the date of commencement of the Act in contravention of the provisions of any law in force before such date and the erection of such building is continued on or after such date in contravention of such provisions or of the provisions of the Act, the person who continues so to erect such building shall be guilty of an offence.

(5) Any person who, having obtained approval in terms of the Act for the erection of any building, deviates to any material degree from any plan, drawing or particulars approved by the local authority shall, except where such deviation has been approved, be guilty of an offence.

(6) The local authority may serve a notice on any person contemplated in section 4(4) of the Act or subregulation (4) or (5), ordering such person forthwith to stop the erection of the building concerned or to comply with such approval, as the case may be: Provided that where any deviation is found to be necessary during the course of construction of such building, the local authority may authorize the work to continue but shall require that an amended plan, drawing or particulars to cover such deviation is submitted and approved before a certificate of occupancy is issued.

(7) Whether or not a notice contemplated in subregulation (6) has been served, the local authority may serve a notice on the owner of any building contemplated in subregulation (4) or (5), ordering such owner to rectify or demolish the building in question by a date specified in such notice.

(8) If, before the date specified for the rectification or demolition contemplated in subregulation (7), the owner satisfies the local authority that he has complied with the requirements contained in these regulations the notice contemplated in subregulation (7) shall be deemed to have been withdrawn.

(9) Where any building is being or has been erected and any contravention of these regulations other than those relating to matters referred to in subregulation (4) or (5) has been committed, the local authority shall serve a notice on the owner of such building and in such notice shall specify a date by which such owner shall have complied with the regulations, cite the regulations contravened and specify the steps to be taken in order to comply with such regulations.

(10) Where any building, excluding a temporary building, is being or has been erected without the prior approval contemplated in section 4(1) of the Act, the local authority shall serve a notice on the owner of such building, calling upon him to obtain the approval, in writing, as required by the Act, by a date specified in such notice.

(11) Any person who fails to comply with any notice contemplated in this regulation shall be guilty of an offence.

Commentary: 1. GENERAL

In terms of section 7 of the National Building Regulations and Building Standards Act, 1977 (Act 103 of 1977), a local authority is required to be satisfied that any application to erect a building complies not only with the requirements of that Act but also with any other applicable law. Where there is conflict between regulations made in terms of Act 103 and regulations made in terms of any other Act the more stringent requirement would prevail. In the case of conflict between a national building regulation and any regulation made in terms of a Provincial Ordinance it would be a general principle that the regulation made in terms of the Act, i.e. the national building regulation, would prevail. However the only sure guide would be a decided case in law. Unless the circumstances are of extreme importance it is therefore probably advisable in this case also to allow the more stringent requirement to prevail.

2. THE ACT AND THE REGULATIONS

(a) The National Building Regulations and Building Standards Act, 1977 (Act 103 of 1977), is the enabling Act under which the National Building Regulations are made. There are three points in particular which must be borne in mind in considering the relationship between Act 103 and the regulations made under that Act —

(i) the word "council" is defined and means the Council of the South African Bureau of Standards;

(ii) the Act contains certain sections which, in the past, would have been contained in local authority building bylaws; and

(iii) not all the old bylaws have been replaced by national building regulations.

Because the Act is more than just enabling legislation it is important to realize that the Act and the regulations must be read together.

(b) Section 29 of the Act provides that all previous building bylaws other than those which have not been replaced by or are not repugnant to the National Building Regulations, have been superseded. Because the National Building Regulations have the technical requirements in functional form it will be found in most cases that a single regulation has replaced a number of old bylaws. Where the old bylaw is repugnant to a national building regulation the position is clear but this is not necessarily so where the bylaw has been replaced by a national building regulation or where reference has been made to the subject in a "deemed-to-satisfy" rule. In many cases there is no direct equivalent of a particular bylaw in the National Building Regulations or in the rules, usually because the committee concerned considered that such a regulation or rule was unnecessary and it was therefore deliberately omitted. This does not necessarily mean that the old bylaw can still be enforced. In such cases it would seem that the deciding factor would be whether or not the general subject, of which it was part, has been covered. Where this subject has been covered it should be assumed that what appears in the National Building Regulations or in the "deemed-to-satisfy" rules is all that the legislators intended to be said on the subject.

A good example of this is the use of airbricks. Most of the older sets of building bylaws had a requirement for airbricks to be placed in the walls of all rooms. In the National Building Regulations all reference to airbricks was deliberately omitted because research shows that they do not serve any useful purpose. However, the intention of airbricks was to provide ventilation and the subject of ventilation is covered in the National Building Regulations. It must therefore be assumed that what is contained in the regulations is all with which it is necessary to comply in respect of ventilation.

Since most of the subjects mentioned in section 17 of the Act have in fact been covered the list given in that section serves as a good guide in deciding as to which old bylaws have been replaced and may not therefore be retained.

3. LOCAL AUTHORITY POWERS UNDER THE ACT

Most of the powers required by a local authority in the process of enforcing the regulations are contained in Act 103. Specifically, these include —

(a) section 4, which contains the primary requirement which prohibits the erection of any building without prior approval of the local authority. This section must be read in conjunction with section 7 which deals with the powers and duties of the local authority in regard to an application for approval;

(b) section 10, which enables a local authority to take action in a case where it considers any building or earthwork to be objectionable in some way;

(c) section 11, which outlines the action a local authority may take when no work has been done in a period of more than 3 months on a building under construction;

(d) section 12, which may be regarded as an extension of section 10 since it allows a local authority to take suitable action not only when a building becomes dilapidated but also when any building or earthworks becomes dangerous in any way. It is of interest that not only does this section contain the usual provisions for rendering the building safe, or, in the extreme case, for demolishing the building but also allows for compulsory evacuation in certain instances;

(e) section 13, which gives to the local authority's building control officer the power to authorize an applicant to erect any building defined in the National Building Regulations as minor building work while exempting him from the obligation to submit a plan to the local authority, i.e. without his being required to comply with the National Building Regulations. In so authorizing the applicant, the building control officer may set conditions or give directions which are not specified but which, presumably, would have to be within the terms of the Act;

(f) section 14, which imposes a duty on the local authority to issue a "certificate of occupancy" if it is satisfied that the completed building has been erected in accordance with the regulations;

(g) section 15, which gives the power to a person authorized by the local authority to enter any building or land at any reasonable time in connection with the consideration of any application submitted in terms of section 4 of the Act or to determine whether the owner of the building or land complies with any provision of the Act or any condition imposed by the local authority in terms of the Act;

(h) section 18, which makes provision for the local authority to permit a deviation or grant an exemption from any regulation except one which may concern the strength and stability of the building;

(j) section 21, which allows a local authority to obtain a court order to stop work on any building where such work is unauthorized or does not comply with the provisions of the Act;

(k) section 22, which, indirectly, allows a local authority to charge rates, taxes, fees or other monies in respect of any building or land or the examination of plans, etc., in terms of this Act;

(l) section 23, which does not give any power but does provide protection to the local authority in the sense that it indemnifies the local authority against any loss, damage, injury or death resulting from the way a building is erected, altered or demolished;

(m) section 29, which restrains the power of a local authority to make building bylaws and indicates that any existing bylaw which has been replaced by or which is repugnant to any national building regulation is repealed. It should be noted that this section also stipulates that any proposed new building bylaw must be submitted to the Minister for approval before it is promulgated and that any new bylaw not so approved is void.

4. FUNCTIONAL REGULATIONS

There is a number of reasons for using functional regulations wherever possible, stemming from the principle that building regulations should encourage any type of building rather than impede its use. Primarily, the object, in the spirit of deregulation, is to allow the designer the greatest possible degree of freedom while still ensuring adequate

control on the end product. A secondary object is to encourage the use of innovative designs and building systems, the revival of satisfactory traditional building methods and the rehabilitation of old but structurally sound buildings. Design skill and construction expertise is at a premium in relation to the vast housing shortage that exists and it is essential that the National Building Regulations do not represent an obstacle to the adoption of any design or building method which could play a part in the solution of this problem.

As defined, a functional regulation is one which sets out a requirement for the performance of the building or element thereof, without limiting the materials, dimensions or method of construction. In contradistinction, the old-type prescriptive regulation lays down, usually in some detail, what material may be used, what the dimensions shall be and how the element should be constructed. Although there may be some underlying assumption of perceived performance based on experience of the use of the prescribed material or method, this is nowhere stated. While easy to understand and to enforce, the prescriptive regulation leads to complete stagnation in the adoption of new materials and new methods of construction because it is too restrictive.

The difference between the two types of regulation is clearly demonstrated in considering a regulation governing the exterior wall of a building. In its simplest form a functional regulation might state:

"Any external wall of a building shall be capable of safely sustaining and transmitting to the foundation all the loads to which it is likely to be subjected and shall provide adequate resistance to rain penetration".

Any form of design or construction which will meet this requirement is acceptable. The equivalent prescriptive regulation might state:

"Any external wall of a building shall have a minimum thickness of 230 mm and shall be constructed of well-burnt clay brick bedded in a cement mortar made of 1 part of cement to 4 parts of river sand".

Although a simple regulation, it completely stifles innovation as, no matter what new materials are available, only clay brick may be used and no matter how strong the units or how careful the design, no thickness less than 230 mm will be permitted.

5. DEEMED-TO-SATISFY RULES

Because not all designers are interested in or desire to use innovative solutions, this code provides a conventional solution in the form of a simple prescriptive rule to accompany any national building regulation which is in functional form. This rule provides guidance as to one method of complying with the regulation since compliance with the rule will be deemed to satisfy the regulation. (Note that these deemed-to-satisfy rules are given in this section of the code.) However, compliance with any of these rules must not, under any circumstances, be regarded as the only way to comply with the related regulation. Where the application for approval shows compliance with any deemed-to-satisfy rule the local authority must (except in the cases mentioned below) accept this aspect of the design as complying with the relevant regulation. However, it is most important to note that the deemed-to-satisfy rule is not in itself a regulation and is therefore not mandatory. For this reason compliance with such rule may not be enforced by any local authority. It is important to note that in the case of Parts P, R and T of the regulations, the local authority may require a rational design to be submitted where it considers that the deemed-to-satisfy rules are inadequate for a particular situation.

6. APPLICATION OF FUNCTIONAL REGULATIONS

It has been argued that the use of functional regulations means that the standardization of requirements which the National Building Regulations was supposed to introduce has not been achieved but this is not so. For reasons explained in item 4 of this commentary, the choice of materials and methods of design and construction have deliberately been left free. What has been standardized is the requirement that the element concerned should be fit for the purpose which it was intended to serve. It cannot be too highly stressed that the standard of performance is set not by what can be achieved by materials and methods of construction which are regarded as conventional but by what is necessary to ensure the health and safety of occupants of a building. In this respect the deemed-to-satisfy rules, although representing one way of complying with the regulation, cannot be

regarded as the standard by which other solutions are judged. Any application of a functional regulation must therefore take into consideration that the required standards of performance may change in accordance with the circumstances and that any solution must be related to the basic philosophy behind the regulations. It is thus important in each case to ask the question, "What are we trying to achieve in applying this regulation?" Basically, of course, the answer will always be that the object is to ensure either the safety or health of people but it must be borne in mind that this object may often be achieved in a simple but unconventional way.

Factors which may have to be considered would include the use of the building, the length of life which the local community would expect from it, the size of the site and the environment in which the building is to be erected. In addition, it may be necessary to take into account the availability and affordability of materials, ease of maintenance, the degree of risk which can be allowed, the relative cost of different solutions and even the background and aspirations of the local community.

Life expectancy may have a considerable influence on the structural aspects of a building. The probability of certain loads occurring or limits being exceeded is obviously much less in a period of 5 years than it would be in a period of 50 years. A modern high-rise office building in an urban area, because of its height is subject to high wind loads in addition to large gravity loads and, by its nature, is complex and costly. It is therefore required to have a long life. This is of course automatically achieved because its very cost and complexity ensure that it will be carefully designed and built using only satisfactory materials and proven construction methods which will provide satisfactory performance in terms of the functional regulations. However, it can be shown that the typical traditional "wattle and daub" hut built in the rural areas can comply with the same regulation and one of the reasons is that the expected life is entirely different. This form of construction will normally last without collapse or distress for at least 2 rainy seasons but will then need major maintenance or replacement. This is known and accepted by the local community and thus, given a life requirement of 2 years, the hut may be said to comply with this regulation.

The two examples used above represent extreme cases but nevertheless illustrate the principle involved. It might be argued that this obvious difference in performance should not be allowed and that in a case such as the hut the regulations should be employed to raise Third World standards to those generally accepted in the First World. Besides the fact that this was never the aim of the regulations it is essential to take into account the realities of the situation.

In many of the outlying rural districts it may not be possible to obtain the more conventional building materials and if it were possible the people would probably not be able to afford them or know how to use them. A similar situation exists in the urban areas in the field of low-cost housing where, particularly with core housing, shell housing and similar self-help schemes there is inevitably much work which is of a temporary nature and which cannot possibly be judged on the same basis as the final product. In the case of any incremental house the provisional authorization, which is of course subject to the limiting area of 80 m², would have to refer to the complete building. The first stage to be built will, by definition, be smaller or incomplete in some other way, but some time limit would have to be set for completion of the building and submission of an application for approval in the normal way. Once this application has been approved the building would no longer be regarded as an incremental building and any subsequent additions would be treated in the same manner as in any other building.

Low-cost housing, by its very nature, can vary from the pure "shanty-town" through all the variations of self-help and many other unconventional methods, to the strictly conventional but small house. What they all have in common is that they are all domestic housing units set on small sites (implying small boundary distances) in large low-rise developments and in all cases initial cost is of paramount importance.

In the application of functional regulations these factors must be taken into account. For instance, because of their situation in a relatively high-density urban situation with little or no high-rise development in the vicinity, it is likely that the walls of these buildings

will be subject to a lower wind load than might usually be assumed and thus strength criteria or bracing requirements might be reduced without endangering the occupants of the house in any way.

The treatment of fire risk is always a problem in the context of low-cost housing. To insist on many of the conventional ways of ensuring safety would be to rule out the use of many potentially cheap yet sound methods of construction so again it becomes necessary to go back to basics. The object of the regulation is to ensure the safety of occupants of the building and they will be safe from the fire if they are outside the building. The object of the regulation may therefore, in many cases, be achieved by insisting on very short travel distances to exits from the house in lieu of other protective measures.

While this sort of treatment may ensure the safety of the occupants of a house it does not in any way help to prevent the spread of fire from one house to another which is an ever-present danger because of the very small boundary distances which are imposed by the small sites on which these houses are built. It may be necessary under these circumstances to accept a slightly higher risk factor as far as property is concerned but it is possible for the local authority to compensate to some extent by other provisions. The most obvious of these would seem to be by ensuring a very low response time from the local fire brigade and an insistence that any house with combustible walls should only be built on a site between houses with non-combustible walls. The latter arrangement does not fall within the scope of building regulations but could be controlled under a town planning scheme.

To sum up, the standards for requirements under a functional regulation are controlled by the requirements of the individual building as influenced by its siting, conditions of use, etc. The local authority cannot enforce any particular empirical requirement as a general rule since what may apply to one building may not apply to another. It is for this reason too, that the deemed-to-satisfy rules given apply usually to a limited range of buildings and, in most cases, tend to be very conservative. A further outcome is that a local authority could only reject an application on sound technical grounds just as a designer may be asked to produce sound technical reasons to justify his design.

7. DESIGNER'S OPTIONS

An application to the local authority must be judged in terms of the functional regulations but how the designer sets about achieving a satisfactory solution is his prerogative. If he produces a rational design or shows on his drawings an unconventional method of construction he may be called upon to justify his work to the local authority and prove that it complies with the regulation. As part of this proof the local authority may require further evidence in the form of test reports or verification of the design before it is accepted. Such acceptance can be much simplified if the design and construction methods are described in a SABS code of practice as this is automatically deemed to satisfy the regulations.

Another option is to use the deemed-to-satisfy rules contained in this section of the code, which will ensure that the application is approved. However, having elected to use these rules, the designer, should he wish to depart from them in any way, may again be required to prove that what he wishes to do will comply with the relevant functional regulation.

For the structural system of a building, design in accordance with the relevant SABS design code of practice is deemed to satisfy the functional regulation but this does not preclude the use of other codes. It is important to realize though, that design requirements from different codes should not be mixed unless the designer is fully aware of the basic difference between the codes and is able to take these into account. It is often the case that codes are based on different assumptions. For instance in limit state codes the partial load factors or materials factors are chosen in a way to suit the overall calibration of the code and this may well differ from code to code.

In using empirical rules it may be found that there is some discrepancy between what is allowed in the deemed-to-satisfy rules given in this code and, for instance, the rules given in some other SABS code. This is of no great consequence and is probably

because the two documents are based on different parameters or assumptions. Either set of rules may be used but they must not be mixed and the set chosen must fit the situation.

Where a rational design is produced it is very likely that the results will differ from those given in the deemed-to-satisfy solution because the latter, having to cover a wide range of unspecified conditions, must be very conservative if it is to be safe wherever it is used.

8. LOCAL AUTHORITY OPTIONS

In considering an application the following points are important:

(a) Where any part of a building is in accordance with the deemed-to-satisfy rules in this code or a method of construction described in any other relevant SABS code of practice or where a design has been carried out in accordance with the requirements of the correct SABS design code, the application must be approved in so far as the relevant part of the regulations is concerned (See also item 5 of this commentary).

(b) In any other case the application must be judged in relation to the functional regulations. In this respect it is important to consult item 6 of this commentary for information on the correct method of applying functional regulations.

(c) It is a requirement of the regulations dealing with design that such design be done by or under the supervision of a professional engineer or other approved competent person. Since "approved" is defined as meaning "approved by the local authority" it is the local authority that is responsible for checking whether or not such person has the necessary qualifications and experience to design the building in question.

(d) Where there is doubt as to the efficiency of any design or method of construction proposed the local authority may call for further information which normally would take the form of one or more of the following —

- (i) a test report from the SABS;
- (ii) a test report from the CSIR;
- (iii) an Agrément certificate;
- (iv) verification of a design by an independent Professional Engineer.

The use, application and limitations of the methods given in (i), (ii) and (iii) above are described in item 9 of this commentary but all of them involve the applicant in additional expense and it is therefore important that this sort of information should only be required where it is really necessary and that, where it is required, it has been established that it will in fact give sufficient information to enable the local authority to decide whether or not to approve an application.

In this connection it must always be remembered that where doubt exists it is the building owner (or the designer appointed by him) who is responsible for proving to the satisfaction of the local authority that an application complies with the regulations and it is not the local authority's responsibility to prove that it does not comply. (See also (f) below.)

However, where an applicant claims that the proposed building is to be erected in accordance with a SABS code of practice (SABS 082 'Timber buildings', for instance) it is the duty of the local authority to check the application against the requirements of the code and only where there is doubt that the requirements of the code have been met should the local authority require the applicant to obtain a test report from the SABS.

(e) It must never be forgotten that Act 103 only requires that the local authority should be satisfied that an application complies with the requirements of the Act and hence with the regulations. Since the technical regulations are functional in nature, the local authority can be "satisfied" simply on the basis that, from its own knowledge and experience, buildings similar to that proposed, sited in similar conditions have performed satisfactorily in the past. It may not, therefore, be necessary to call for any further information.

(f) The SABS is at all times available to give to local authorities any help and advice it can in the application of these regulations but neither it nor any other organization can give approval of an application. This is the local authority's field and such power is theirs alone.

(g) Where an application is not approved, section 7 of Act 103 makes it clear that reasons for such rejection must be given to the applicant in writing. In the case of the functional regulations it is important to note that such reasons would have to be good technical reasons why the proposed building would not comply with the regulations and in sufficient detail to enable the designer to amend his design accordingly.

9. TEST REPORTS AND CERTIFICATES

The test reports and certificates referred to in item 8(d) above contain different degrees of information and serve different purposes. The following notes are intended to provide guidance in their choice and use:

(a) A SABS test report is, in most cases, a factual report indicating the result of tests performed to ascertain the behaviour of the building or building component in respect of one or more specific characteristics. In relation to the National Building Regulations, the report may also take the form of an assessment or evaluation based on test results. It does not in any way imply approval of the item tested and the local authority must decide, in light of the test results, whether it can approve the application. In a case where the local authority has not specified what tests it requires it must also decide whether the characteristics tested are actually those which are in doubt.

A further point which is important is the date of the test report. SABS reports apply only to the items actually tested and manufactured items may be changed over a period of time. An old test report may therefore not be relevant in respect of current production. In considering one or more reports covering a number of different characteristics of the material it is also important to ascertain that the samples tested were all from the same batch. If this is not the case the results may not be relevant.

Where a SABS report indicates that the performance of the building or building component is such that it may be deemed to satisfy one or more specific regulations this must be accepted by the local authority in making its decision on the application.

(b) A CSIR report is similar in many ways to a SABS report but, because the CSIR is a research organization, its reports can be wider ranging and can incorporate the results of non-standard tests to give a larger variety of information. As in a SABS report, where items are indicated as being deemed to satisfy any particular regulation this must be accepted by the local authority.

(c) Agrément certificates represent an entirely different approach. The original intent of the Agrément certificate was to present as complete an assessment as possible of any new building system, component or material in addition to indicating whether it was considered suitable for use. The latest certificates also state which of the national building regulations, if any, the system or component may be deemed to satisfy.

It should be noted that although test reports may be adequate to supply the information that a local authority may need to assess an application the Agrément certificate serves an additional very important purpose in that it provides more information of a type which may be useful to anyone buying or promoting a new building system or component.

The MANTAG certificate is a variation on the normal Agrément certificate but may be treated in the same way by a local authority. It covers only those qualities considered essential in low-cost housing or self-help housing.

Nothing, of course, precludes a local authority from considering favourable test reports from other sources such as universities or independent laboratories run by private enterprise but it must be stressed that such reports are not automatically deemed to satisfy the regulations as are the reports from the SABS or CSIR.

The validity of each report would have to be checked before the test results could be used in the assessment of an application in terms of the Act.

10. REVIEW BOARD

The Review Board, consisting of a chairman appointed by the Minister, and two independent nominated assessors, acts as a court of appeal. It has power to consider an appeal when an application has not been approved by a local authority, when any person disputes a notice of prohibition issued in terms of section 10 of the Act or when any person disputes the interpretation or application by a local authority of any national building regulation or any other building regulation or bylaw. The procedure to be followed by an applicant is as follows:

(a) On receipt from the local authority of a notice of refusal to grant approval the applicant must decide whether, in light of the reasons given for the rejection, he is going to amend his plans or whether he wishes to appeal to the Review Board for relief.

(b) In the case of a dispute in connection with any notice of prohibition issued in terms of section 10 of the Act or a dispute in connection with the interpretation or application of any regulation, the applicant should follow the same procedure as would be required in the case of an application for which approval has not been granted.

(c) Where an appeal is to be made to the Review Board the applicant must address a request for consideration of his appeal, setting out the grounds on which the appeal is based, to the Director General of the SABS for transmission to the chairman of the Review Board.

(d) Simultaneously with the lodgement of notice of appeal with the Director General the applicant must lodge a copy of the notice of appeal with the local authority in question.

(e) The notice of appeal must be accompanied by such plans, specifications and documents, and any other information required by the Review Board, as will enable the Review Board to effectively deal with the appeal and an identical set of information must be forwarded to the local authority concerned.

(f) A fee of R100 must be paid by the applicant before an appeal will be considered.

The Review Board has the power to call any witness it feels may be able to help it reach a decision and it may, at its own discretion, either hold a hearing or it may come to a decision based on the evidence without any formal hearing. Such decision can be either —

(i) to dismiss the appeal and confirm the local authority's decision to refuse to grant approval, its prohibition in terms of section 10 of the Act or its interpretation or application of the regulation, as the case may be; or

(ii) to uphold the appeal in whole in part.

When an appeal has been upheld, the local authority must then —

(i) approve the application;

(ii) withdraw the provisions of the notice of prohibition; or

(iii) adopt the decision of the Review Board in regard to the interpretation or application of the regulation in question, whichever course of action is appropriate in the circumstances.

The full Review Board regulations may be found in Government Gazette No. 9927 of 13 September 1985.

11. MINOR BUILDING WORK

The term "minor building work" was intended to cover certain building work which, because of either its nature or magnitude or both, was such that it would not be necessary to submit full plans or in certain cases, where no plans or any other documents would

be required. The implication is that where no plans are required the building would not have to comply with the National Building Regulations since, without plans, there is no means of assessing an application. It is, however, necessary in all cases that an application be submitted to the local authority so that it is aware that the work is proposed and it can set conditions in those cases where it is considered necessary to invoke at least some of the national building regulations to control the proposed building work.

Certain examples of minor building work mentioned in Part A of the regulations have been exempted from the requirement that plans and other particulars must be submitted with any application. The fact that specific examples of minor building work are listed in the definition thereof would seem to indicate that it was the intention that in these cases also, authorization should be granted without submission of plans wherever such plans are not absolutely essential. Carports and swimming pools may in some instances be an exception since, where servitudes are involved, the siting may be important and hence a site plan may be required. In the case of carports to be erected in areas subject to strong winds it may also be necessary to consider structural aspects.

For any other building of a nature similar to those listed in the definition it is left to the discretion of the building control officer to decide whether or not it should be classified as minor building work and if so, what plans or other documents should be submitted with the application, i.e. to what regulations the building should comply. The intention should be clear that for this type of building, which does not involve eating, sleeping, living or working areas for any person, there should be an absolute minimum of control placed on any reasonable structure.

12. BUILDINGS IN THE DESIGN STAGE

Provision has been made in regulation A2(3) of the National Building Regulations for buildings which are in course of design when the regulations come into force. The purpose of this regulation is to make allowance for those buildings where the design is too far advanced to allow for a change to comply with new regulations and a certain procedure is laid down for notifying the local authority of the existence of such design.

This notification must be given within a period of 90 days after the coming into operation of the new regulations. Thereafter, the applicant has a period of 24 months after the local authority has notified him that it is satisfied that the application complies with regulation A2(3), to complete the design and submit an application to the local authority. The local authority has the power to further extend this period if it considers it necessary. It is important to note that this concession goes beyond the initial introduction of the National Building Regulations. Because regulation A2(3) refers to "the coming into operation of the Act" and the Act includes any regulations made under the Act, it means that whenever any new regulation is introduced a designer at work on a design may make application to have his design considered in terms of the regulations in force when the design was commenced, provided that he follows the procedure laid down in regulation A2(3).

13. ALTERATIONS AND ADDITIONS TO EXISTING BUILDINGS

Although in general the National Building Regulations are not retroactive in application, a problem may arise when alterations or additions are carried out on buildings that have been erected in compliance with earlier building bylaws.

In the case of an addition it may be possible to treat the new portion as an entirely separate part which can be designed to comply with the National Building Regulations without having any effect on the original portion of the building. In the case of an alteration this will seldom be so and it therefore becomes necessary to ask to what extent that part of the building which it is not proposed to alter should comply with the National Building Regulations. This may be particularly pertinent in the application of the fire regulations where escape route requirements, for instance, tend now to be more stringent.

It is obvious that a pragmatic and essentially practical approach is necessary. In terms of the functional regulations every attempt must be made to ensure the safety and health of the occupants of the building but this must be within the context of what may be practical and economically sound in an old building. If an owner or entrepreneur cannot alter

a building to suit his purpose at a cost which will enable him to have a reasonable economic return he will probably not alter the building at all. This could lead to the perpetuation of a situation which may be dangerous but one which is in compliance with old bylaws and is thus perfectly legal. Such a situation could often be considerably improved by making certain changes that are practical and economically sound even though they would not provide the same standard as would be expected in a new building.

To reiterate what was said in item 6 of this commentary, both the owner and the local authority will have to ask, "What are we trying to achieve?" with the regulations but in this case the answer must be tempered by the knowledge of what it is reasonable and practical to require of an existing building.

14. SERVICES OFFERED BY THE SABS

Problems related to the use of this or any other SABS code of practice or specification mentioned in the regulations should be addressed to the SABS as should any proposals for amendments. The SABS is also able to offer a number of services connected with the application of the regulations. The provision of test reports on the performance of building materials, components and elements, or even complete buildings in certain cases, has already been mentioned. In addition, the SABS will, where requested, assess any building application or proposed application for compliance with all the regulations. In terms of the Act, a favourable report is acceptable to any local authority as being proof that the application complies with the requirements of the Act. Such a report may be requested by either a local authority or by an owner but it must be pointed out that in some cases the fee charged by the SABS could be high if a site inspection or design confirmation is required.

SABS officers are available to explain the use of the regulations and give advice on their application and it is usually possible to arrange for talks on this subject to be given to small groups.

Although not directly connected with the application of the regulations, it should be noted that certain other services offered by the SABS may be found useful when referring to the "deemed-to-satisfy rules". Since any building material which complies with the relevant SABS specification is automatically acceptable in terms of these rules it is important to have some evidence of compliance. The SABS mark provides such evidence but in cases where the product does not bear the SABS mark, samples can be tested in the SABS laboratories. In the latter case, this evidence extends only to the samples actually tested and it is therefore desirable to arrange for the SABS to test samples from each consignment when the product is supplied to the building site.

PART B STRUCTURAL DESIGN

REGULATIONS

B1 DESIGN REQUIREMENT

(1) Any building and any structural element or component thereof shall be designed to provide strength, stability, serviceability and durability in accordance with accepted principles of structural design, and so that it will not impair the integrity of any other building or property.

(2) Any such building shall be so designed that in the event of accidental overloading the structural system will not suffer disastrous or progressive collapse which is disproportionate to the original cause.

(3) The requirements of subregulations (1) and (2) shall be deemed to be satisfied where such building is designed in accordance with Part B of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

BB1 GENERAL

The regulation contained in Part B of the National Building Regulations shall be deemed to be satisfied where the structural design of any building complies with deemed-to-satisfy rules contained in the following provisions of this Part.

BB2 STRUCTURAL DESIGN

The design of the structural system of any building shall be carried out in accordance with SABS 0160 (for loads) and in accordance with one or more of the following codes of practice relating to the materials used in such building or in any element or component thereof:

- (a) SABS 0100 (for structural concrete)
- (b) SABS 0104 (for handrails)
- (c) SABS 0137 (for glazing)
- (d) SABS 0161 (for foundations)
- (e) SABS 0162 (for structural steel)
- (f) SABS 0163 (for structural timber)
- (g) SABS 0164 (for structural masonry)

BB3 STRUCTURAL MATERIALS

BB3.1

The material used in the construction of any structural element or component thereof shall be that specified or contemplated in —

- (a) the relevant SABS code of practice where such code has been used as a basis for the design;
- (b) rules **HH1**, **JJ1**, **KK1**, **LL1** or **NN1** of SABS 0400, as the case may be; or
- (c) any document, other than a SABS code of practice contemplated in rule **BB2**, which has been used as a basis for the design:

Provided that where the materials specified in such document are not available, other approved materials may be used if they have been shown to be suitable in relation to such document.

BB3.2 Where any structural material other than one covered by any code of practice contemplated in rule **BB2** is used in any building, the design of such building and the structural elements and components thereof shall be in accordance with a safe method applicable to the structural use of such other material.

BB4 **RESPONSIBILITY FOR DESIGN AND CONSTRUCTION**

BB4.1 Any rational design of a structural system shall be done or checked by a professional engineer or other approved competent person, and such person shall certify that such design complies with the requirements contained in regulation **B1**: Provided that nothing shall be construed as precluding the use of rule **HH1**, **JJ1**, **KK1**, **LL1**, or **NN1**, as the case may be, where the use of such rule is appropriate.

BB4.2 Such person shall, by means of inspections carried out at such intervals as may be necessary in accordance with accepted professional practice, satisfy himself that the structure has been erected in accordance with the approved design and shall furnish to the local authority a certificate to this effect.

PART C DIMENSIONS

REGULATIONS

C1 ROOMS AND BUILDINGS

(1) Any room or space shall have dimensions that will ensure that such room or space is fit for the purpose for which it is intended.

(2) The floor area of any dwelling unit shall not be less than that necessary to provide one habitable room and a separate room containing toilet facilities.

(3) The requirements of subregulations (1) and (2) shall be deemed to be satisfied where the area and plan dimensions of any room or space, the room heights and, in the case of any dwelling house, the floor area comply with Part C of section 3 of SABS 0400.

DEEMED-TO-SATISFY-RULES

CC1 GENERAL

The regulation contained in Part C of the National Building Regulations shall be deemed to be satisfied where the dimensions of any room or space comply with deemed-to-satisfy rules contained in the following provisions of this Part.

CC2 PLAN DIMENSIONS

CC2.1 The plan dimensions of any room or space shall be the horizontal dimensions between unplastered wall surfaces.

CC2.2 Any floor area shall be based upon the plan dimensions but shall not include any area occupied by any built-in cabinet or cupboard or any dividing wall or partition erected, in terms of subrule **CC2.4**.

CC2.3 The floor area of any room contemplated in column 2 of Table 1 shall be not less than that prescribed for such room in column 3 of Table 1.

TABLE 1 — ROOM AREA

1	2	3
Type of occupancy	Room	Minimum plan area
All occupancies	Any habitable room other than a kitchen, scullery or laundry.	6 m ² with no linear dimension of less than 2 m .
B, D or J	Change rooms and dining rooms	Population 1 — 15: 0,8 m ² per person but not less than 6 m ² . Population 16 — 100: 0,6 m ² per person but not less than 12 m ² . Population more than 100: 0,5 m ² per person but not less than 60 m ² .

CC2.4 Two or more spaces shall be deemed to be one room if any dividing wall or partition, including any door, erected between such spaces occupies less than 60 % of the area of the separating plane.

CC3 ROOM HEIGHTS

CC3.1 The height of any room or space contemplated in column 1 of Table 2 shall not be less than that prescribed for such room or space in column 2 of Table 2 and shall be the vertical dimension from the top of the finished floor to —

- (a) the underside of the ceiling;
- (b) the underside of the roof covering where there is no ceiling; or
- (c) the underside of any structural members where such structural members project below such a ceiling or a roof covering and the plan area of such projections exceeds 30 % of the plan area of the room.

CC3.2 Notwithstanding the requirements contained in Table 2, where any structural member projects below the level of the ceiling or, where there is no ceiling, below the level of the roof covering, the height to such projection shall not be less than 2,1 m .

TABLE 2 — ROOMS AND THEIR DIMENSIONS

1	2
Room or Space	Minimum height
Bedroom	2,4 m over a floor area of at least 6 m ² with a clear height of at least 1,8 m at any point more than 0,75 m from the edge of the floor space.
Any other habitable room in a dwelling house or dwelling unit	2,4 m over a minimum of 70 % of the floor area, and not less than 2,1 m over the remaining floor area.
All habitable rooms other than those listed above	2,4 m
Passage or entrance hall	2,1 m
Bathroom, shower-room, laundry or room containing a WC pan	2,1 m over any area where a person would normally be in a standing position.
Open mezzanine floor which has an area not exceeding 25 % of the area of the floor immediately below it	2,1 m above and below the mezzanine floor.

CC4 FLOOR AREA

The overall plan area of any dwelling house shall be not less than 15 m² in the case of any temporary building or 30 m² in the case of any permanent building.

Commentary: *The plan areas given are very small but this is necessary in the interests of providing affordable housing. In the case of certain types of self-help housing such as the "core-house", the first stage will, by definition be small, and will seldom consist of more than a single room plus toilet facilities. The fact that such a building would be regarded as a temporary building should ensure that it will eventually progress to something more reasonable in size.*

Since rule CC2.3 gives a minimum size for habitable rooms the number of rooms in a dwelling house will to some extent influence the overall area of the building. In this context the rules do not indicate whether a habitable room must be of greater size than the minimum given if such a room is to be used for multiple purposes, but for practical if not legal reasons this obviously would be desirable. In the case of the temporary house consisting of one habitable room it is assumed that this will be used for eating, sleeping and cooking as well as being a general living room.

With the present tendency towards smaller sites it is likely that many more houses of a size much smaller than has been common in the past will be built. In considering the very small permanent building it must be remembered that size cannot be equated to quality and a small house will not therefore automatically detract from the value of surrounding larger houses.

Figure 1(a), (b) and (c) illustrates the measurement of the plan area of a room as referred to in subrule CC2.2.

Figure 2 illustrates a room with a dividing wall, such room being regarded as a single room where the area of the wall E, F, G, C is less than 60 % of the area of the plane A, B, C, D.

Figure 3 illustrates measurement of the ceiling height. This height would normally be taken at level 2 in Figure 3 but if the sum of the plan areas of ribs A, B, C, D, E, F and G is greater than 30 % of the total area of the room, the ceiling height should be measured to level 1. The minimum height of level 1 must never be less than 2,1 m .

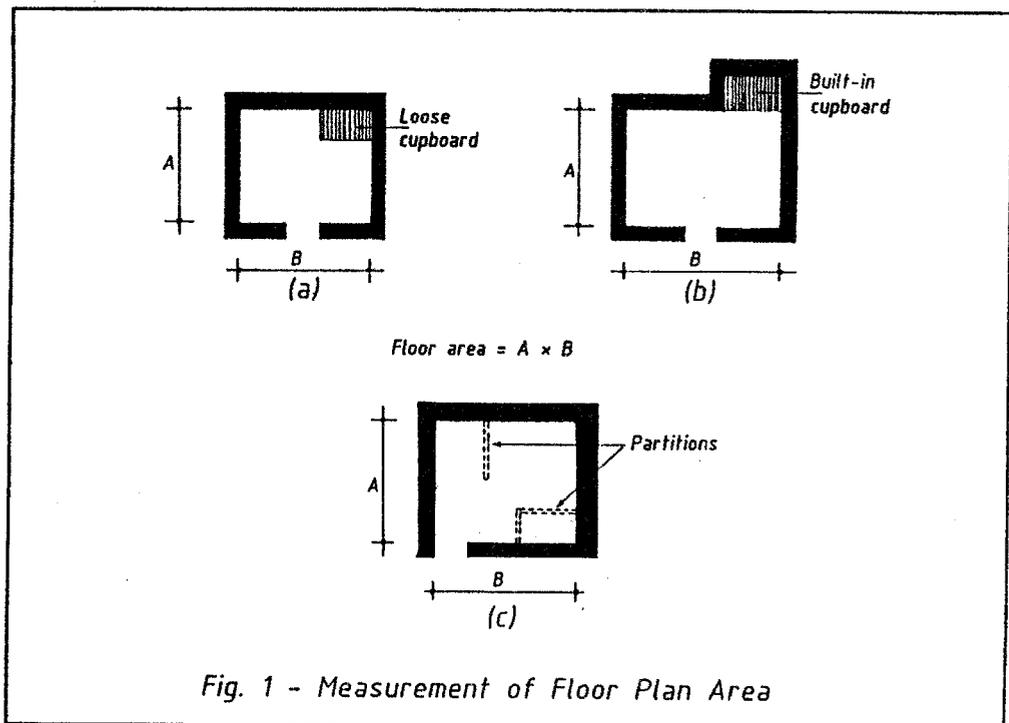


Fig. 1 - Measurement of Floor Plan Area

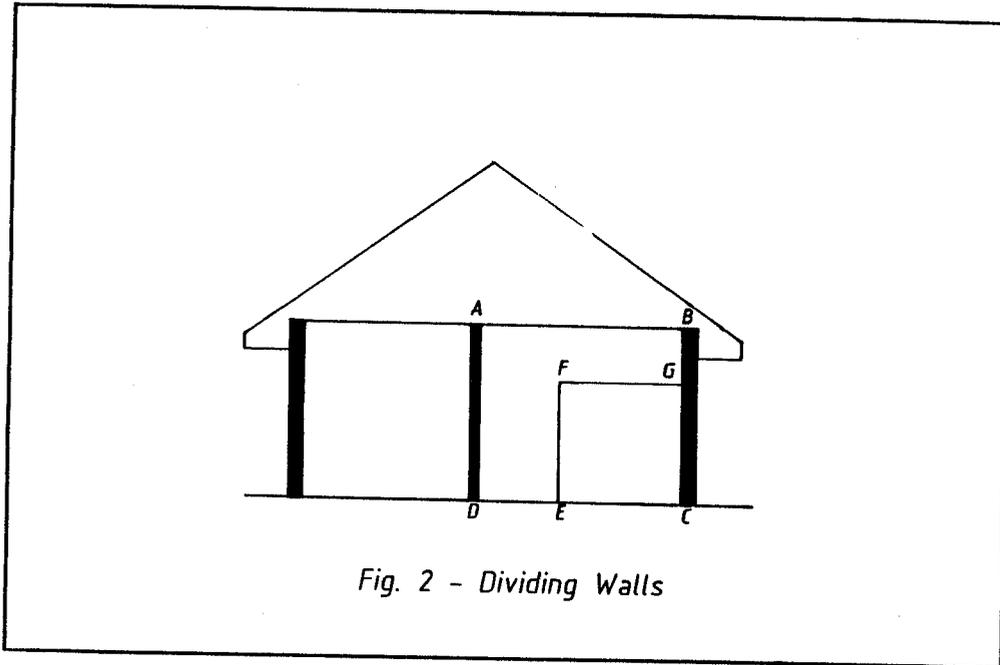


Fig. 2 - Dividing Walls

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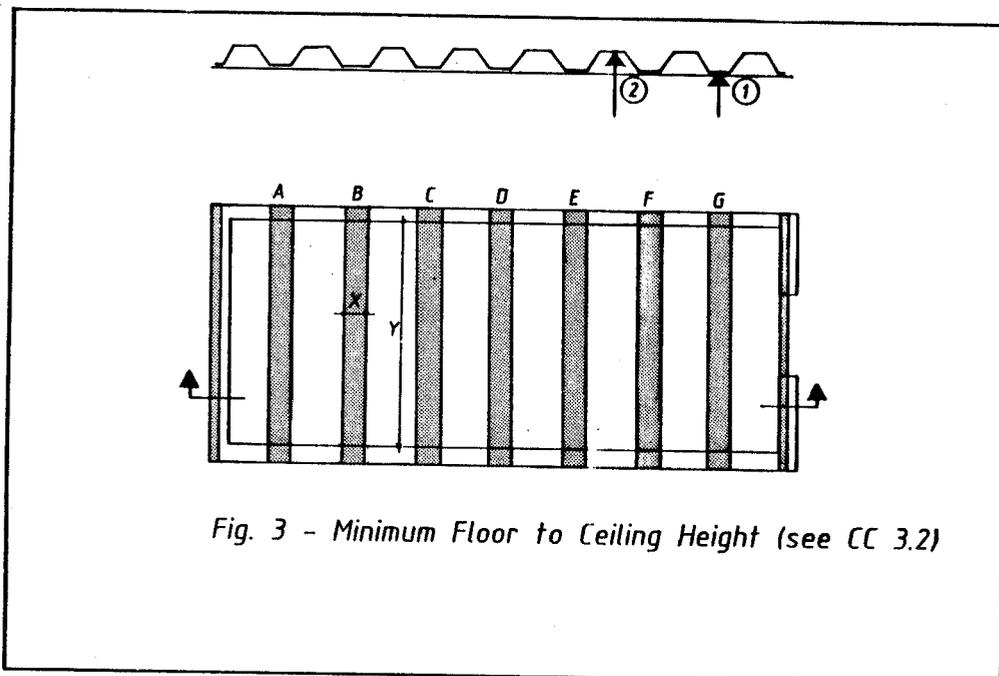


Fig. 3 - Minimum Floor to Ceiling Height (see CC 3.2)

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PART D PUBLIC SAFETY

REGULATIONS

D1 CHANGE IN LEVEL

The protection of the edge of any balcony, bridge, flat roof or similar place shall be designed to prevent any person from falling from such balcony, bridge, flat roof or similar place.

D2 PEDESTRIAN ENTRANCES TO PARKING AREAS IN BUILDINGS

Where any pedestrian entrance is provided to a vehicle parking area in any building, such entrance shall be so positioned, marked or protected that no pedestrian can unintentionally walk into the path of any moving vehicle: Provided that this requirement shall not apply in respect of any building classified as H4 in terms of regulation A20.

D3 RAMPS

Any ramp or driveway shall be so designed that it is safe when used and is fit for the purpose for which it is intended.

D4 SWIMMING POOLS AND SWIMMING BATHS

(1) The owner of any site which contains a swimming pool shall ensure that access to such swimming pool is controlled.

(2) Any owner who fails to comply with the requirement of subregulation (1) shall be guilty of an offence.

D5 DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulations D1, D3 and D4 shall be deemed to be satisfied where change in level, the design of ramps and driveways, or access to swimming pools, as the case may be, complies with Part D of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

DD1

GENERAL

The regulations contained in Part D of the National Building Regulations shall be deemed to be satisfied where change in level, the design of ramps and driveways, or access to swimming pools and swimming baths, as the case may be, complies with deemed-to-satisfy rules contained in the following provisions of this Part.

DD2

CHANGE IN LEVEL

DD2.1

Any balustrade or wall provided to protect a change in level shall be subject to the requirements contained in regulation B1.

DD2.2

The edge of any balcony, bridge, flat roof or similar place more than 1 m above the adjacent ground or floor level shall be provided with a balustrade or parapet wall not less than 1 m in height, unless unauthorized access of persons thereto has been excluded by a physical barrier properly erected and maintained.

DD2.3 In the case of any interior balcony or any mezzanine floor such balcony or floor shall be provided with a balustrade or wall not less than 1 m in height: Provided that where such balcony or floor is used for public seating in rows such height may be reduced to not less than 800 mm opposite the seating in the front row.

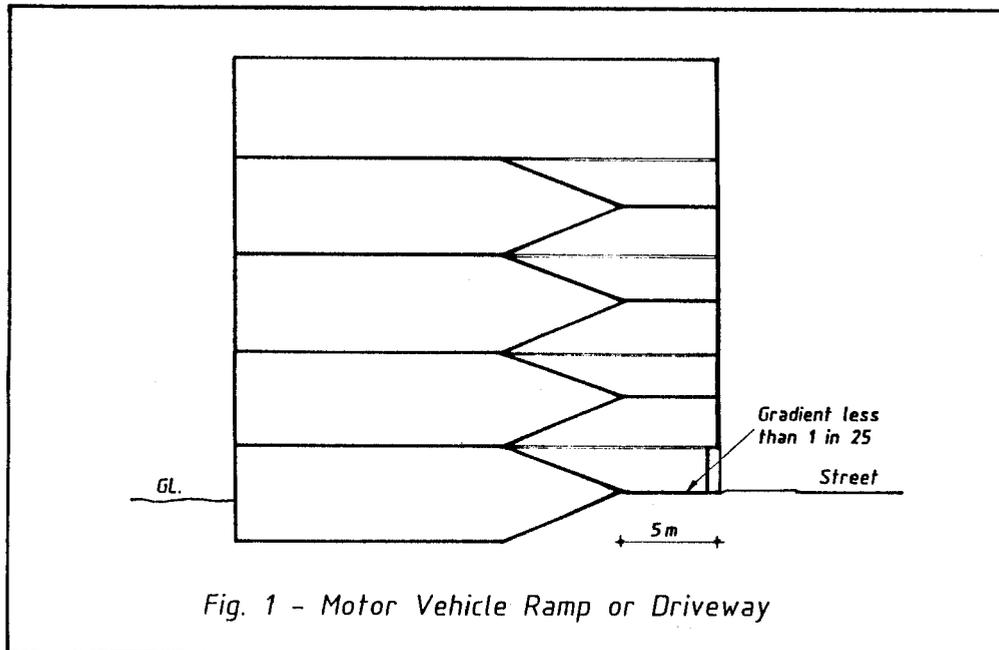
DD2.4 Any balustrade or wall provided as protection at any change in level in any occupancy classified E2, E3, H1, H2 or H3 shall not have any opening that permits the passage of a 100 mm diameter ball: Provided that such protection in any occupancy not being an occupancy classified E2, E3, H1, H2, H3 or H4, shall consist of at least a handrail and one other rail midway between such handrail and the floor.

DD3 RAMPS

In any building, not being a building classified H4, or on any site on which such building is situated, any —

- (a) ramp or driveway used by motor vehicles shall have a gradient of not more than 1 in 25 within a distance of 5 m from any street boundary crossed by such ramp or driveway;
- (b) ramp or driveway used by pedestrians shall have a gradient of not more than 1 in 8;
- (c) ramp designed for use by both vehicles and pedestrians shall have a walkway not less than 1,2 m wide which shall be provided with a kerb not less than 150 mm high.

Commentary: Figure 1 illustrates safety distance at the end of a motor vehicle ramp or driveway



DD4 SWIMMING POOLS AND SWIMMING BATHS

DD4.1 The owner of any site which contains a swimming pool or swimming bath shall ensure by means of a wall or fence that no person can have access to such pool or bath from any street or public place or any adjoining site other than through a self-closing and self-latching gate with provision for locking in such wall or fence: Provided that where any building forms part of such wall or fence, access may be through such building.

DD4.2 Such wall or fence and any such gate therein shall be not less than 1,2 m high measured from the ground level, and shall not contain any opening which will permit the passage of a 100 mm diameter ball.

DD4.3 The constructional requirements of such fence or gate shall comply with the requirements contained in SABS 1390.

Commentary: Figure 2 illustrates ways of controlling access to a swimming pool. Other methods for the protection of children from the hazards of swimming pools are given in SABS 0134.

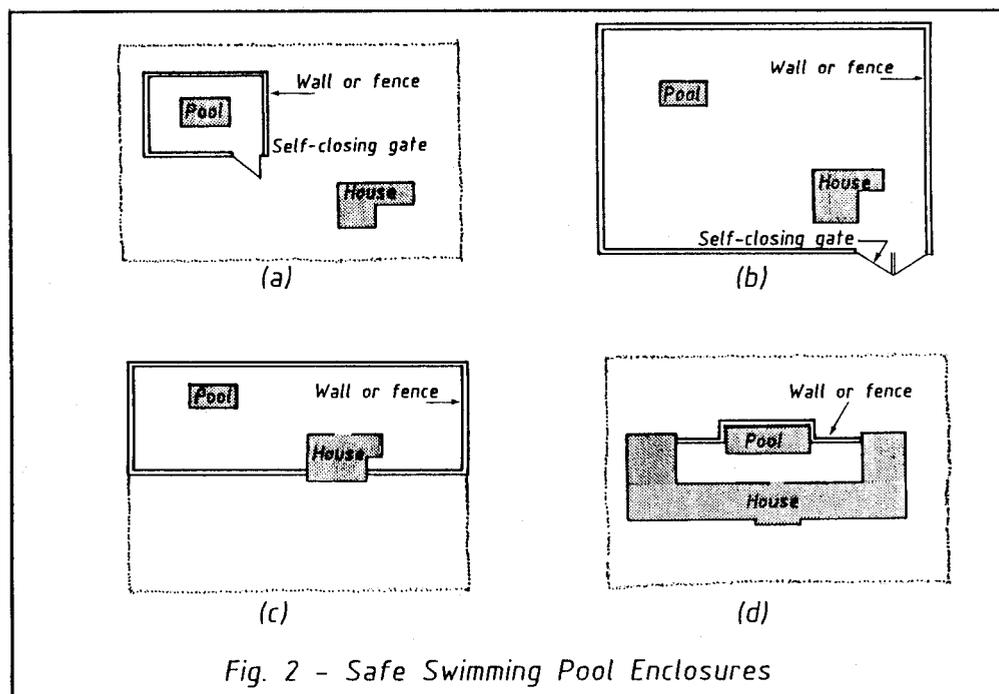


Fig. 2 - Safe Swimming Pool Enclosures

PART E DEMOLITION WORK

REGULATIONS

E1 DEMOLITION OF ANY BUILDING

(1) No owner of any site shall demolish or cause or permit to be demolished any building without the prior written permission of the local authority.

(2) The local authority may, in granting such permission, impose any condition or requirement contemplated in subregulations F1(4) and (5) and regulation F2 for the safety, health and convenience of the public, and for the safety of any other building or installation which in its opinion may be affected by such demolition.

(3) No person shall at any time during the course of or after the demolition of a building leave it in a condition dangerous to the public or any adjoining property.

(4) Where a condition contemplated in subregulation (3) arises the local authority may serve a notice on such person requiring him to make the site safe, and if he fails so to do, the local authority may itself carry out the necessary work and recover the costs thereof from such person.

E2 SAFEGUARDING OF BASEMENTS

Where any building is demolished to the level of the ground and such building contained a basement, the owner of such building shall provide or cause to be provided safe lateral support to the sides of such basement.

E3 PROHIBITION OF DANGEROUS METHODS

The local authority may prohibit the use of any method to be applied in the demolition of any building where in its opinion such method will create or cause to be created any danger to any person or other building or property, and where it so prohibits it shall, on the request of the owner of such building, give its reasons, in writing, for such prohibition.

E4 GENERAL PENALTY

Any person who contravenes any requirement of the regulations of this Part or fails to comply with any notice, condition or order issued thereunder, shall be guilty of an offence.

PART F SITE OPERATIONS

REGULATIONS

F1 PROTECTION OF THE PUBLIC

(1) In cases where danger or serious inconvenience to the public may ensue from the demolition or erection of a building on any site, the local authority may require that the owner of such site, before such work is commenced, shall erect a fence, hoarding or barricade to prevent the public from entering such site and to protect them from the activities on such site.

(2) Such fence, hoarding or barricade shall for as long as is necessary be retained and maintained by such owner in a safe condition, and any access to such site, and the means thereof, shall be subject to approval.

(3) No part of such fence, hoarding or barricade shall be removed without the permission, in writing, of the local authority until the work has been completed.

(4) Any person undertaking any work of erection or demolition on any site shall confine all operations in connection with such work within the boundaries of such site and shall not encroach upon or over any street or public place abutting such site, except with the prior written approval of the local authority, and subject to the conditions contained in such approval with regard to the safety and convenience of persons using such street or public place.

(5) The local authority may, before or during the erection or demolition of any building, impose any reasonable conditions in addition to the conditions and requirements contemplated in this regulation, for the purpose of safeguarding the interests of the general public, and every condition so imposed shall be observed by the owner.

(6) Any owner who contravenes or causes or permits any other person to contravene a requirement of this regulation or fails to comply with any notice served on him by the local authority ordering compliance with this regulation, or contravenes any condition contained in any approval, shall be guilty of an offence.

F2 DAMAGE TO LOCAL AUTHORITY'S PROPERTY

(1) Where any work connected with the demolition or erection of any building may, in the opinion of the local authority, cause or have any detrimental effect on the strength, standard, safety, quality or position of any property belonging to or vested in such local authority, the local authority may require the owner of such building to pay to the local authority such deposit or give such security, as it may require to cover the costs of the repair of any damage which may be caused by such work.

(2) In the event of damage to the local authority's property being so caused the local authority may appropriate the amount of the deposit or security contemplated in subregulation (1) towards the costs of repairing such damage: Provided that if the amount of the deposit or security exceeds such costs the balance shall be refunded to the owner: Provided further that if such costs exceed the amount of the deposit or security, such owner shall be liable to the local authority for the deficit.

(3) Where any deposit contemplated in subregulation (1) has not been lodged with the local authority the owner of such building shall pay the cost of such repair to the local authority on demand, failing which the local authority may recover such cost from the owner in a court of competent jurisdiction.

F3 UNSTABLE SOIL CONDITIONS

(1) Where any local authority has reason to believe that there may be unstable subsoils or unstable slopes in the area in which a site, upon which a building is to be erected, is situated, it shall so inform the applicant.

(2) Whether or not such local authority has informed such applicant in terms of subregulation (1), the applicant shall, if any unstable soil or unstable slope is evident within the boundaries of such site, submit to the local authority particulars specifying the measures he considers necessary to make provision for any differential movements or other effects which could be detrimental to such building, and the local authority may require such particulars to be prepared by a professional engineer or other approved competent person.

(3) The measures contemplated in subregulation (2) shall be applied in the erection of such building.

F4 PREPARATION OF SITE

(1) Before any foundation is laid the area to be covered by any building shall be properly cleared of vegetable matter, tree stumps, timber and other cellulose material, debris or refuse and any material contaminated with faecal matter.

(2) Where any site upon which any building is to be erected is waterlogged or saturated, or where any building is to be so situated that water will drain naturally towards it, drainage shall be provided to direct such water away from such site or building to a stormwater drain or to dispose of it in some other safe approved manner.

F5 SOIL POISONING

Where so required by the local authority, the soil in all areas within the site as defined in code of practice SABS 0124 shall be treated in accordance with the recommendations of SABS 0124.

F6 CONTROL OF DUST AND NOISE

(1) The owner of any land on which excavation work is in progress or on which any building is being erected or demolished shall take precautions in the working area and on surrounding roads and footways to limit to a reasonable level the amount of dust arising from the work or surroundings thereof.

(2)(a) No person shall, during the periods specified in paragraph (b), carry on any activity or use or permit to be used in the course of any building, demolition or excavation work any machine, machinery, engine, apparatus, tool or contrivance, in whatever manner it may be propelled, which in the opinion of the local authority may unreasonably disturb or interfere with the amenity of the neighbourhood.

(b) The periods referred to in paragraph (a) shall be as follows:

(i) A Sunday and Good Friday, Ascension Day, Day of the Vow, Christmas Day and New Year's Day;

(ii) before 06:00 and after 17:00 on any Saturday; and

(iii) before 06:00 and after 18:00 on any day other than those days contemplated in subparagraphs (i) and (ii).

(c) The prohibition in paragraph (a) shall not apply in any circumstances in which the use of such machine, machinery, engine, apparatus, tool or contrivance —

(i) is urgently necessary in order to preserve the life, safety or health of any person;

(ii) is urgently necessary to preserve property;

(iii) has been authorized by the local authority; or

(iv) is necessary for the execution of work being carried out on behalf of any public authority.

(3) Any owner or person who contravenes a provision of this regulation shall be guilty of an offence.

F7 CUTTING INTO, LAYING OPEN AND DEMOLISHING CERTAIN WORK

(1) Where the local authority, on reasonable grounds, believes that any work carried out in connection with the erection of any building is not in accordance with the provisions of these regulations or any approval or authority granted thereunder, such local authority may, in order to establish whether such work is in accordance with such provision, approval or authority, by notice in writing, order the owner of such building —

(a) to supply satisfactory proof that such work is in accordance with such provision, approval or authority; or

(b) to cause such work to be cut into, laid open or demolished to the extent required by the local authority; or

(c) to cause a test of such work to be carried out within such time and to such extent and by such person as it specified in such notice.

(2) (a) Where such local authority orders the owner to cause a test to be carried out as contemplated in subregulation (1)(c), a written report in regard to such test shall be submitted by the owner to the local authority, which report shall be signed by the person who carried out the test and which shall contain details in regard to the testing apparatus, methods and materials used in the test, the conditions under which such test was carried out and the results obtained during the test and at the conclusion thereof.

(b) Where as a result of a report contemplated in paragraph (a) the local authority is not satisfied that the work concerned is in compliance with the requirements referred to in subregulation (1), the local authority may, by notice served on the owner, order the owner to take such steps as it deems necessary, and within such period as is stated in such notice, to ensure that there is such compliance, or the local authority may in such notice order the owner to cause

such work to be cut into, laid open or demolished as contemplated in subregulation (1)(b).

(3) (a) Any owner having been ordered to cause any work to be cut into, laid open, demolished or tested in terms of this regulation shall not continue with such work or with any other work affected thereby unless the local authority has authorized him, in writing, to continue.

(b) Where the local authority is satisfied that work on the affected part of the building may proceed, it shall forthwith give authorization to so proceed.

(4) Where such cutting into, laying open, demolishing or testing reveals that a contravention of the requirements of these regulations, or of any approval or authority granted by the local authority, has taken place, or if the necessity for such cutting into, laying open, demolishing or testing is attributable wholly or partly to any contravention of the proviso to subregulation A4(1)(b) or the requirements of regulation A22 or A25, the cost of such work and any making good subsequent thereto shall be borne by the owner, and in any other case by such local authority.

(5) Any owner who contravenes any provision of this regulation or who fails to comply with any notice served on him in terms thereof, shall be guilty of an offence.

F8 WASTE MATERIAL ON SITE

(1) Where in the opinion of the local authority, excessive rubble, rubbish, other debris or combustible waste material is allowed to accumulate on a site before or during building operations, it may, by written notice, order the owner of such site to have such rubble, rubbish, other debris or combustible waste material removed within the period specified in such notice.

(2) Any owner who fails to comply with such notice shall be guilty of an offence and the local authority may remove the said rubble, rubbish, other debris or combustible waste material from such site and may recover the costs of such removal from the owner.

F9 CLEANING OF SITE

(1) Any owner or person erecting or demolishing any building shall remove any surplus material and matter arising from such erection or demolition from the site and from any other land or public street or public place affected by such material or matter during or after the completion of such erection or demolition, failing which the local authority may, by written notice, order the owner of such building to have such surplus material and matter removed within a period specified in such notice.

(2) Any owner or person who fails to comply with a provision of subregulation (1) or a notice served on him in terms thereof, shall be guilty of an offence.

F10 BUILDER'S SHEDS

(1) Any owner or person carrying out or performing work in connection with the erection or the demolition of any building, may erect on the site of such work such temporary builder's sheds as may be necessary.

(2) The construction and location of such sheds shall be to the satisfaction of the local authority and such sheds shall be maintained in good order.

(3) Subject to the provisions of subregulation (6) such sheds shall only be used for a purpose connected with the carrying out or the performance of the work referred to in subregulation (1).

(4) Where such sheds are not constructed, located or maintained in terms of this regulation, the local authority may serve a notice on such owner or person to move, reconstruct or repair or improve the condition of such sheds within a time specified in such notice, or if use thereof is being made other than that permitted in terms of this regulation, to cease such unpermitted use.

(5) On completion or cessation of the work referred to in subregulation (1) or where such sheds are no longer necessary for the purpose for which they were erected, they shall be removed from the site by the owner.

(6) Security personnel employed in connection with a building which is being or which is to be erected or demolished may be accommodated in builder's sheds, subject to such requirements and conditions as may be necessary for the safeguarding of public health and the health of such personnel and for avoiding nuisance or inconvenience to persons in the vicinity of such building.

(7) Any owner or person who fails to comply with any provision of this regulation or any notice served on him in terms thereof, shall be guilty of an offence.

F11 SANITARY FACILITIES

(1) No owner or person shall commence or continue the erection or demolition of any building unless approved sanitary facilities for all personnel employed on or in connection with such work have been provided or are available on the site or, with the permission of the local authority, at some other place: Provided that where such facilities have not been so provided the local authority may order the cessation of such work until the required facilities have been provided, and, should such order not be complied with, the local authority may install such facilities and recover the costs of such installation from the owner of the site.

(2) Any owner or person who contravenes any provision of this regulation, or fails to comply with an order served on him in terms thereof, shall be guilty of an offence.

(3) The requirements of subregulation (1) shall be deemed to be satisfied where the provision of sanitary facilities complies with Part F of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

FF1

GENERAL

The requirements contained in regulation F11 of the National Building Regulations shall be deemed to be satisfied where the provision of sanitary facilities complies with the deemed-to-satisfy rules contained in the following provisions of this Part.

FF2

SANITARY FACILITIES

FF2.1

Sanitary facilities shall be so sited as not to be offensive and shall at all times be maintained in a clean and hygienic condition, and shall, unless they are of a permanent nature, be removed by such owner or person immediately such building work has been completed.

FF2.2

Sanitary facilities shall be provided at the rate of not less than one sanitary facility for every thirty (or part of that number) of the personnel concerned.

PART G EXCAVATIONS

REGULATIONS

G1 GENERAL STABILITY REQUIREMENT

(1) Where any excavation related to a building is carried out or is to be carried out on any site and such excavation may impair the safety or stability of any property or service, the owner of such site shall take adequate precautionary measures to ensure that the safety and stability of such property or service is maintained.

(2) While any such excavation remains open, and during the placing of any foundation within it, such excavation shall be maintained in a safe condition by the owner or person carrying out such excavation.

(3) Where the safety or stability of any property or service is likely to be impaired by such excavation, or where the depth, at any point, of such excavation is likely to be more than 3 m, the owner of the site shall —

(a) obtain the prior written authorization of the local authority for such excavations; and

(b) take the precautionary measures specified by the local authority in such authorization.

(4) The owner of any site shall, at least seven days prior to the commencement of any excavation contemplated in subregulation (1), notify the local authority in writing of his intention to excavate.

(5) Any owner or person who fails to comply with any requirement of this regulation, shall be guilty of an offence.

G2 DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulation G1(1) shall be deemed to be satisfied where the excavation complies with Part G of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

GG1

GENERAL

Subregulation G1(1) contained in Part G of the National Building Regulations shall be deemed to be satisfied where for any excavation on any site —

(a) measures to ensure the safety and stability of any property or service are the subject of an acceptable rational design carried out by or under the supervision of a professional engineer or other approved competent person; or

(b) such excavation complies with Part G of section 3 of SABS 0400.

GG2

EXCAVATIONS FOR FOUNDATIONS

GG2.1

Any excavation more than 3 m deep shall be designed by a professional engineer or other approved competent person.

GG2.2

Any excavation for any foundation shall be taken down to firm natural ground: Provided that it shall be permissible to cast any foundation in filled ground if approved measures are taken to ensure the stability and the serviceability of the building.

GG2.3

The bottom of any excavation in ground other than rock shall be horizontal: Provided that where such a bottom is in the form of steps, such steps shall have horizontal and vertical surfaces.

GG2.4

Where any foundation is placed on solid rock, the bearing area shall be cleaned and, where necessary, so stepped or dowelled as to prevent lateral movement of such foundation.

GG2.5 Except where the foundation for any external masonry wall is placed on solid rock, the bottom of the excavation for such a foundation shall not be less than 300 mm below the level of the adjoining finished ground.

PART H FOUNDATIONS

REGULATIONS

H1 GENERAL REQUIREMENT

(1) The foundation of any building shall be designed to safely transmit all the loads from such building to the ground.

(2) The requirement of subregulation (1) shall be deemed to be satisfied where the design and construction of such foundation complies with Part H of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

HH1

GENERAL

The regulation contained in Part H of the National Building Regulations shall be deemed to be satisfied where —

- (a) any foundation is the subject of a rational design in accordance with the requirements contained in Part B; or
- (b) the construction of any foundation complies with deemed-to-satisfy rules contained in the following provisions of this Part.

HH2

EMPIRICAL RULES FOR FOUNDATIONS

HH2.1

Any foundation constructed in accordance with subrules **HH2.2** to **HH2.8** inclusive shall not be used to support any wall forming part of the structural system of any building except where —

- (a) such wall is placed centrally on such foundation;
- (b) such wall is the wall of any building contemplated in rule **KK2** of this code; and
- (c) the soil supporting such foundation is not a heaving soil or shrinkable clay or a soil with a collapsible fabric.

HH2.2

Any such foundation shall be constructed in concrete having a compressive strength of not less than 10 MPa at 28 days, or be mixed in proportions by volume of 1 part of cement, 4 parts of sand and 5 parts of coarse aggregate.

HH2.3

Any continuous strip foundation shall have a thickness of not less than 200 mm: Provided that where the foundation is laid on solid rock such thickness shall not apply.

HH2.4

The width of any continuous strip foundation shall be not less than —

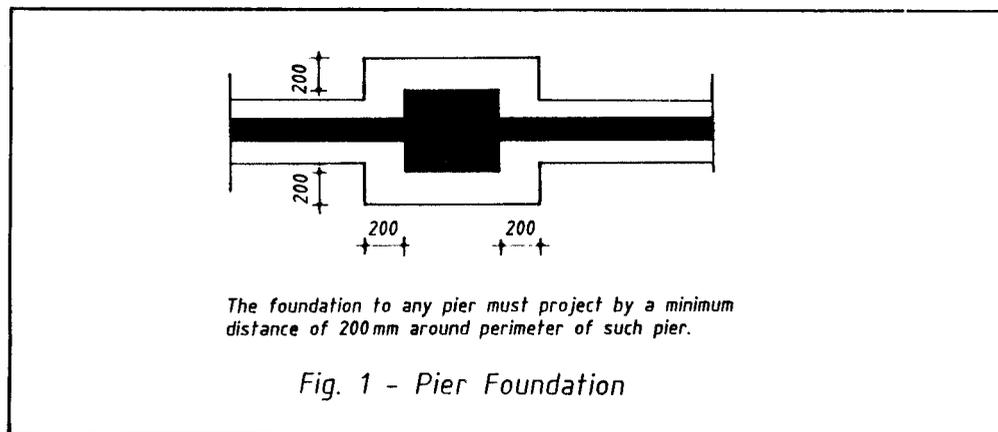
- (a) 600 mm in the case of a foundation to a load-bearing or free standing masonry wall or to a timber framed wall supporting a roof with Class B covering contemplated in subrule **LL3.4** of this code; or
- (b) 400 mm in the case of a foundation to a non-load-bearing internal masonry wall or to a timber framed wall supporting a roof with Class A or Class C covering contemplated in subrule **LL3.4** of this code.

- HH2.5**
- (a) Where any strip foundation is laid at more than one level the higher portion of the foundation shall extend over the lower portion for a distance at least equal to the thickness of the foundation.
 - (b) Any void between the top of the lower portion of such foundation and the underside of the higher portion shall be completely filled with concrete of the same strength as that required for such foundation.

- HH2.6**
- Where any concrete floor slab is thickened to form a foundation —
- (a) the thickness, including that of such floor slab, shall be not less than that required for a continuous strip foundation; and
 - (b) the width of the thickened portion below such floor slab shall be not less than that required for a continuous-strip foundation:
- Provided that such thickening shall not be required under non-load-bearing timber-framed walls.

- HH2.7**
- (a) Where any pier is built into or forms part of any wall the thickness of the foundation to such pier shall be the same as that required for such wall.
 - (b) The length and width of the foundation to such pier shall be such as to project by 200 mm at any point on the perimeter of such pier.

Commentary: Figure 1 illustrates the requirements of HH2.7(b).



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- HH2.8**
- (a) The thickness of the foundation to any sleeper pier or sleeper wall shall be not less than 150 mm .
 - (b) The length or width of the foundation to such sleeper pier shall be not less than 450 mm .
 - (c) The width of the foundation to such sleeper wall shall be not less than 300 mm .

PART J FLOORS

REGULATIONS

J1 GENERAL REQUIREMENT

- (1) Any floor of any building shall —
- (a) be strong enough to safely support its own weight and any loads to which it is likely to be subjected; and
 - (b) have a fire resistance appropriate to its use and where required, be non-combustible.
- (2) The floor of any laundry, kitchen, shower-room, bathroom or room containing a WC pan or urinal shall be water-resistant.
- (3) Any suspended timber floor in a building shall be provided with adequate under-floor ventilation.
- (4) Where any concrete floor slab is supported on ground or filling, such floor shall be so constructed that any moisture present in such ground or filling is prevented from penetrating such concrete floor slab.
- (5) The requirements of subregulations (1), (2), (3) and (4) shall be deemed to be satisfied where the design and construction of any floor complies with Part J of section 3 of SABS 0400: Provided that where the local authority deems it necessary in order to satisfy the requirements of subregulation (4), such local authority may require that the entire area within the foundation walls of any building shall be covered by a suitable damp-proof membrane.

DEEMED-TO-SATISFY RULES

- JJ1 GENERAL**
- The regulation contained in Part J of the National Building Regulations shall be deemed to be satisfied where —
- (a) any floor is the subject of a rational design in accordance with the requirements contained in Part B; or
 - (b) the construction of any floor complies with deemed-to-satisfy rules contained in the following provisions of this Part.
- JJ2 FLOOR CONSTRUCTION**
- JJ2.1** Any floor of any building shall comply with the fire requirements contained in rules TT5, TT6, TT7, TT11, TT19, TT39, TT41, TT50, TT51, TT52, TT53, VV3 and VV4, as the case may be.
- JJ2.2** Any floor supported on ground or on filling shall be constructed of —
- (a) impervious floor units not less than 40 mm thick and consisting of slate, bricks, natural stone or other approved material; or
 - (b) a concrete slab which shall have a compressive strength of not less than 10 MPa at 28 days, or be mixed in the proportions by volume of 1 part cement, 4 parts sand and 5 parts coarse aggregate, and the thickness of such slab shall be not less than 75 mm .
- JJ2.3** Such filling material shall —
- (a) consist of suitable material; and
 - (b) be applied in well compacted layers not more than 150 mm in thickness.

- JJ2.4** Any concrete floor slab passing over or supported on foundation walls shall be designed in accordance with Part B as a suspended floor slab.
- JJ2.5** Any water-resistant floor shall be constructed of concrete or other approved material.
- JJ2.6** Any suspended timber floor shall be constructed in accordance with SABS 082.
- JJ2.7** The underside of any floor boards other than those laid on a concrete slab shall be not less than 550 mm above the surface of the ground immediately below such floor boards.
- JJ2.8** Provision for ventilation under suspended timber floors and the protection of ventilation openings shall be in accordance with SABS 082.
- JJ2.9** The materials used in any suspended timber floor shall be in accordance with SABS 082.
- JJ3** **UNDER-FLOOR MEMBRANE**
- JJ3.1** Any under-floor membrane shall be not less than 0,25 mm thick and shall be laid on a surface which shall not contain any sharp object which may perforate such membrane.
- JJ3.2** Such membrane shall be turned up around the perimeter of and at least for the full thickness of any slab.
- JJ3.3** Any joint in such membrane shall overlap by not less than 150 mm and shall be effectively sealed.

PART K WALLS

REGULATIONS

K1 STRUCTURAL STRENGTH AND STABILITY

Any wall shall be capable of safely sustaining any loads to which it is likely to be subjected and in the case of any structural wall such wall shall be capable of safely transferring such loads to the foundations supporting such wall.

K2 WATER PENETRATION

Any wall shall be so constructed that it will adequately resist the penetration of water into any part of the building where it would be detrimental to the health of occupants or to the durability of such building.

K3 ROOF FIXING

Where any roof truss, rafter or beam is supported by any wall provision shall be made to fix such truss, rafter or beam to such wall in a secure manner that will ensure that any forces to which the roof may normally be subjected will be transmitted to such wall.

K4 BEHAVIOUR IN FIRE

Any wall shall have combustibility and fire resistance characteristics appropriate to the location and use of such wall.

K5 DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulations K1, K2, K3 and K4 shall be deemed to be satisfied where the structural strength and stability of any wall, the prevention of water penetration into or through such wall, the fixing of any roof to such wall and the behaviour in a fire of such wall, as the case may be, comply with Part K of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

KK1

GENERAL

The regulations contained in Part K of the National Building Regulations shall be deemed to be satisfied where —

- (a) any wall, not being a balustrade, free standing or retaining wall —
 - (i) is the subject of a rational design indicating that such wall complies, in regard to strength and stability, with the requirements of Part B or where such wall complies with the requirements contained in provision **KK3**; and
 - (ii) complies with any relevant deemed-to-satisfy rules contained in provisions **KK9**, **KK13**, **KK14**, **KK15** and **KK16**;
- (b) any bulustrade, free standing or retaining wall is the subject of an acceptable rational design or where such wall complies with the requirements contained in provision **KK10**, **KK11** or **KK12**, as the case may be.

KK2

BUILDING LIMITATIONS FOR EMPIRICAL DESIGN

KK2.1

Where any structural wall is to be erected in terms of rules **KK3** to **KK15** inclusive, and without detailed structural design calculations, the building of which such wall forms a part shall be subject to the limitations contained in subrule **KK2.2**.

- KK2.2** The building referred to in subrule **KK2.1** shall be not more than two storeys in height and shall be subject to the following limitations:
- (a) The building plan-form and the layout of the intersecting mutually stabilizing walls that form part of such building shall be such as to provide a structure which is stable against the action of horizontal forces from any direction and shall consist of a rectangular, polygonal or circular cell or series of contiguous or intersecting cells.
 - (b) The span between supporting walls of a timber or metal roof truss, roof rafter or roof beam shall be not more than 10 m and the span between supporting walls of any first floor or roof slab shall be not more than 6 m .
 - (c) (i) The dead load of the roof covering material shall be not more than 800 N/m² of slope area for roofs other than concrete slabs.
(ii) Concrete roof slabs shall be not more than 175 mm in thickness if of solid construction or the equivalent mass if of voided construction.
 - (d) Concrete first-floor slabs shall be not more than 175 mm in thickness if of solid construction or the equivalent mass if of voided construction.
 - (e) In order to limit floor loading on first-floor space or on suspended ground-floor slabs the use of such floors shall be restricted to —
 - (i) detached dwelling houses and dwelling units;
 - (ii) bedrooms, wards, dormitories, bathrooms, rooms containing soil fixtures, kitchens, dining-rooms, lounges and corridors in educational buildings, hospitals, hotels and other institutional occupancies;
 - (iii) classrooms;
 - (iv) offices; and
 - (v) cafés and restaurants.

KK3 EMPIRICAL RULES FOR WALLS

KK3.1 Any wall used as a structural external or internal wall, non-structural internal wall, non-structural external wall panel, parapet wall, balustrade wall, free-standing wall or retaining wall (where such retaining wall is not part of a basement) shall comply with rules **KK3** to **KK17**, as the case may be.

KK3.2 Where such wall is a structural wall and —

- (a) is a masonry wall forming part of any building contemplated in rule **KK2**, such wall shall be constructed in accordance with the relevant rules in this Part and the materials, height and unsupported length of such wall shall conform to the relevant limits contained in rules **KK4**, **KK5** and **KK7** and, in the case of a cavity wall, such wall shall comply with the additional requirements applicable thereto contained in rule **KK8**; or
- (b) is a timber framed wall such wall shall be constructed in accordance with SABS 082, and the height and unsupported length of such wall shall not exceed the limits given in Table 3.

KK3.3 Where such wall is a non-structural wall and —

- (a) is an internal wall in any building, such wall shall comply with the relevant limits contained in rules **KK4**, **KK5** and **KK7**;
- (b) (i) is a masonry external cladding or external infilling panel in any building not more than 25 m in height, the materials, height and unsupported length of such wall shall conform to the relevant limits contained in rules **KK4**, **KK5**, **KK6** and **KK7** and; in the case of any cavity wall, such wall shall comply with the additional requirements applicable thereto contained in rule **KK8**;
- (ii) is a masonry parapet wall, the thickness of such wall shall be not less than one-fifth of its height; or
- (c) is a timber framed wall such wall shall be constructed in accordance with SABS 082, and the height and unsupported length of such wall shall not exceed the limits given in Table 3.

KK4 MATERIALS

KK4.1 Masonry units used in the erection of walling shall comply with the requirements for compressive strength contained in Table 1.

KK4.2 Mortar used in the erection of a building shall comply with Table 1.

KK4.3 Materials used in any wall of timber framed construction shall be in accordance with SABS 082.

TABLE 1 — STRENGTH REQUIREMENTS FOR MASONRY UNITS AND MORTAR

1 Wall type	2 Position		3 Minimum average compressive strength, MPa		5 Class of mortar required
			Solid units	Hollow units	
Structural other than foundation and retaining walls	Single storey building	External or Internal	7,0	3,5	II
	Double storey building	External or Internal	10,5 or * 14,0	7,0	II
Non-structural other than parapet, balustrade and free-standing walls	External		7,0	3,5	II
	Internal		7,0	3,5	III
Free-standing	External or internal		10,5	7,0	II
Foundation	Supporting single storey		7,0	3,5	II
Foundation	Supporting double storey		10,5 or 14,0	7,0	II
Parapet	—		7,0	3,5	II
Balustrade	—		7,0	3,5	II
Retaining	—		10,5	7,0	II

*See Table 2.

Commentary: The required minimum average compressive strength of masonry units given in columns 3 and 4 of Table 1 is that calculated from the test method in the relevant masonry unit specification. It is based on the gross bed area of the units without any deduction for perforations or hollows in the bed area of the units. It is therefore a measure of the actual material strength only in the case of solid units. The approximate mix proportions for the classes of mortar given in column 5 of Table 1 are contained in Table C-1 of SABS 0164 which is reproduced below in an abbreviated form for convenience —

1	2	3	4
Mortar class	Portland cement	Lime*	Sand (measured) loose and damp
	kg	ℓ	ℓ, max.
II	50	0-40	200
III	50	0-80	300

*The addition of lime to the mix is optional.

KK5 WALL DIMENSIONS

- KK5.1**
- (a) Where any wall is a masonry wall contemplated in Table 2 the height and unsupported length of such wall shall not exceed the relevant values given in Table 2;
 - (b) Where any wall is of timber framed construction, the height and unsupported length shall not exceed the values given in Table 3;
 - (c) All gable walls shall be adequately laterally supported.

- KK5.2** Where effective lateral support is to be provided to any masonry wall by means of an intersecting masonry wall, such intersecting wall shall —
- (a) be constructed of masonry units and mortar of strengths not less than those of the units and mortar used in the wall it supports;
 - (b) intersect the supported wall at an included angle of between 60° and 120°;
 - (c) have a height of not less than 80 % of the height of the supported wall;
 - (d) have a thickness of not less than —
 - (i) the supported wall or load-bearing leaf of the supported wall where such supported wall is a structural wall;
 - (ii) 45 % of the thickness of the supported wall or 90 mm, whichever is the greater, where such supported wall is a non-structural wall, such thickness in the case of a cavity wall being deemed to be the sum of the thicknesses of the leaves of the wall; and
 - (e) have a length of not less than —
 - (i) 10 times the thickness of the supported wall or load-bearing leaf of the supported wall where such supported wall is a structural wall;
 - (ii) one-fifth of the height of the wall panel to be supported or one-eighth of the greatest distance between such intersecting wall and any other intersecting wall providing lateral support, whichever is the greater, where such supported wall is a non-structural wall, and such length shall not include the thickness of the supported wall.

- KK5.3** Where integral masonry piers are used in any non-structural masonry wall in order to provide resistance to flexure in the vertical plane, such piers shall —
- (a) have a depth perpendicular to the length of any such wall, of three times the thickness of such wall where such depth includes the thickness of such wall;
 - (b) have a width along the length of any such wall of twice the thickness of such wall;
 - (c) be effective only if the height of such pier is not less than 80 % of the height of any such wall.

TABLE 2 — PERMISSIBLE DIMENSIONS OF MASONRY WALLS IN BUILDINGS

1	2	3	4	5	6	7	8
Nominal wall thickness, mm	Use of wall in a building	Max. storey height, m ⁽¹⁾⁽⁵⁾	Max. height, ground floor to top of external gable, m	Max. unsupported length, m ⁽²⁾	Min. nominal unit strength, MPa		Min. class of mortar ⁽⁴⁾
					Solid units	Hollow units	
90	Non-structural internal wall in any storey	3,0	NA	6,0	7,0	3,5	II
	External infilling and cladding to framed building to height of 25 m	3,3	NA	note (3)	7,0	NP	II
	Wall providing lateral support in single storey building but carrying no gravity load other than its own weight	3,0	NA	6,0	7,0	3,5	II
110	Non-structural internal wall in any storey	3,3	NA	7,0	7,0	3,5	III
	External infilling and cladding to framed building to height of 25 m	3,3	NA	note (3)	7,0	3,5	II
	Structural wall in single storey building Wall providing lateral support in single or double storey building but carrying no gravity load other than its own weight	2,6 3,3	4,0 NA	6,0 7,0	7,0 7,0	3,5 3,5	II II
140	Non-structural internal wall in any storey	3,0	NA	7,0	7,0	3,5	III
	External infilling and cladding to framed building to height of 25 m	3,0	NA	5,0	7,0	3,5	II
	Structural wall in single storey building	3,3	5,0	6,0	7,0	3,5	II
	Structural wall in double storey building	3,0	7,5	6,0	10,5	7,0	II
190	Non-structural internal wall in any storey	3,5	NA	9,0	7,0	3,5	III
	External infilling and cladding to framed building to height of 25 m	3,3	NA	7,0	7,0	3,5	II
	Structural wall in single storey building	3,5	5,5	8,0	7,0	3,5	II
	Structural wall in double storey building	3,3	8,5	8,0	10,5	7,0	II
230	Non-structural internal wall in any storey	4,0	NA	9,0	7,0	3,5	III
	External infilling and cladding to framed building to height of 25 m	3,3	NA	8,0	7,0	3,5	II
	Structural wall in single storey building	4,0	6,0	9,0	7,0	3,5	II
	Structural wall in double storey building	3,3	8,5	9,0	10,5	7,0	II
90-50-90 to 90-110-90 cavity wall	External infilling and cladding to framed building to height of 25 m	3,3	NA	5,0	7,0	3,5	II
	Structural wall in single storey building	3,0	4,5	8,0	7,0	3,5	II
	Structural wall in double storey dwelling unit without concrete slab roof	2,8	7,5	8,0	14,0	NP	II
110-50-110 to 110-110-110 cavity wall	External infilling and cladding to framed building to height of 25 m	3,3	NA	6,0	7,0	3,5	II
	Structural wall in single storey building	3,0	5,0	9,0	7,0	3,5	II
	Structural wall in double storey building	3,0	8,0	9,0	14,0	7,0	II

NOTE: NA means NOT APPLICABLE. NP means NOT PERMITTED

- (1) The storey height is measured from floor level to floor level or, in the case of the topmost storey, from floor level to eaves and the maximum height of any wall panel may be assumed to be equal to the relevant maximum permissible storey height.
- (2) Distance between intersecting walls, concrete columns or other members providing effective lateral support to wall and to which it is securely bonded or anchored. Where wall panel is supported at one end only, the unsupported length shall not exceed one-half of the tabulated length.
- (3) Only permitted as exterior leaf of cavity wall in which internal leaf is a structural concrete wall to which a masonry wall is tied as required for cavity walls by rule **KK8**.
- (4) See Table 1.
- (5) A parapet wall of 500 mm in height added to storey height is permitted.

TABLE 3 — PERMISSIBLE DIMENSIONS FOR TIMBER-FRAMED WALLS

1	2	3	4	5	6	7
Wall type	Stud size, mm	Stud spacing, mm	Maximum panel length, m		*Max. height, m	Max. storey height, m
			Supported both ends	Supported one end		
Structural	114 x 38	400	4,8	2,4	6,0	4,0
	114 x 38	600	4,0	2,0	6,0	3,0
	76 x 38	450	3,6	1,8	3,0	3,0
Non-structural	114 x 38	600	4,8	3,0	—	4,0
	76 x 38	600	4,2	2,4	—	3,0

*Maximum height means height to wall plate of highest storey or height to top of gable, if there is a gable.

Commentary: Lateral support to structural walls is provided in horizontal or vertical planes (by means of floors and walls respectively) in order to restrict the relevant slenderness ratio. A pier may be regarded as a column in a plane at right angles to the wall and thus supplements the cantilever action of a non-structural wall under lateral loading but it cannot be regarded as providing effective lateral support to a structural wall in all circumstances.

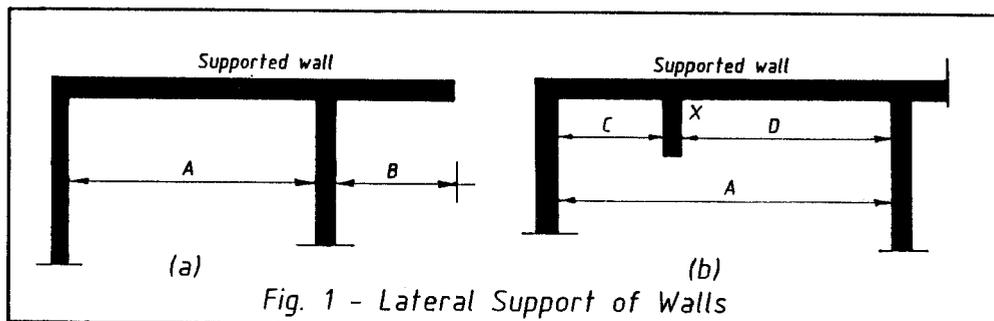
Non-structural walls are assumed to be neither supported nor vertically loaded at the top edge. Such walls may, however, be laterally loaded or may provide support to some other wall which is laterally loaded. Any internal wall, whether free-standing or whether provided with lateral support at one or both ends, will normally be subjected to lateral loading which is relatively small but in the case of external walls of a building or free-standing garden walls wind loading may be a significant factor. The use of piers in a free-standing garden wall serves to increase the stability of the wall but it should be noted that the minimum dimensions for piers indicated in Table 5 are most effectively employed where the pier is symmetrically placed i.e. where the projection each side of the wall is equal to half the projection required by Table 5.

It must be remembered that there is a sharp reduction in wind speed near the ground and that this effect is particularly evident in built-up urban areas. It may thus be found that for a free-standing garden wall of less than 2 m in height the figures given in Table 5 are conservative under some circumstances. The table is, nevertheless, essentially intended to relate to the use of such walls in urban areas and where any wall is to be erected under exposed conditions on open terrain it is advisable to check the adequacy of the design.

Where a wall is given lateral support by cross-walls as shown in Figure 1, the dimension A shall be not more than the maximum unsupported length given in Table 2, and B shall be not more than half this value.

Where A is more than the maximum value given, an additional supporting wall may be introduced at point X and the supported wall may be regarded as safe provided that neither dimension C nor dimension D is more than the maximum unsupported length permitted by Table 2.

The length of the supporting wall, measured as a projection from the supported wall, must be not less than one-eighth of A or B in Figure 1(a) and one-eighth of C or of D, (whichever is the greater) in Figure 1(b).



- KK6** **EXTERNAL MASONRY CLADDING OR INFILLING PANELS IN FRAMED BUILDINGS**
- KK6.1** Any external masonry cladding or infilling panel in a framed building shall be securely anchored to the structure.
- KK6.2** Where the area of window openings in such panel is more than 20% of the face area of the panel calculated as the storey height multiplied by the unsupported length, the top of the panel shall be anchored to the structure in a manner that will permit relative vertical movement but restrain the wall against lateral movement.
- KK6.3** Such cladding shall be supported on suitable beams, slabs or nibs at each storey and adequate provision shall be made for relative vertical movement between the masonry and the structure frame at the underside of such supports.
- KK6.4** Movement joints shall be provided in such cladding at intervals of not more than 10 m to allow for relative horizontal movement.
- KK7** **COLUMNS AND PIERS IN WALLS**
- Masonry columns and piers between openings in walls shall have a height not exceeding twelve times their least lateral dimension: Provided that the local authority may require the strength and stability of such column or pier to be substantiated by calculation or other acceptable means.
- KK8** **CAVITY WALLS**
- KK8.1** Any cavity formed in an external masonry cavity wall shall be not less than 50 mm wide and not more than 110 mm wide.
- KK8.2** Wall ties shall be installed in any cavity wall in an evenly distributed pattern, at a rate of 2,5 ties per square metre of the face area of such wall where the cavity is not more than 75 mm and at a rate of 3 ties per square metre of face area where the cavity is more than 75 mm in width.
- KK8.3** Such wall ties shall comply with the requirements contained in SABS 28.
- KK9** **FOUNDATION WALLS**
- (a) The height of any foundation wall not acting as a retaining wall shall be not more than 1,5 m .
- (b) Where a difference in ground level including backfill exists between the two sides of any foundation wall such difference shall be not more than 1,0 m .
- (c) No foundation wall shall have a thickness less than the relevant value given in Table 4: Provided that such thickness shall not be less than —
- (i) the thickness of the wall carried by such foundation wall; or
- (ii) where the wall carried by such foundation wall is a cavity wall, the sum of the thicknesses of the leaves of such cavity wall.

TABLE 4 — MINIMUM THICKNESS OF FOUNDATION WALLS

1	2	3	4	5	6	7	8	9
Type of foundation wall		Minimum thickness of wall, mm						
		Acting as a retaining wall			Not acting as a retaining wall			
		*Difference in ground level, mm			Height, mm			
		Less than 500	500 to 750	750 to 1 000	Less than 300	300 to 500	500 to 1 000	1 000 to 1 500
Single leaf brick	External	140	190	230	140	140	140	190
	Internal	—	190	230	90	140	140	190
Single leaf hollow block (cavities filled with concrete)	External	140	190	230	140	140	140	190
	Internal	140	190	230	90	140	140	190
Cavity walls (cavity filled to 150 mm below damp-proof course level)	External	190	190	230	190	190	190	190

*For difference in ground level of more than 1 000 mm see Table 6.

KK10 BALUSTRADE WALLS

KK10.1 Any balustrade wall shall conform to the requirements contained in rule **DD2**.

KK10.2 Notwithstanding the requirements of **KK10.1** in any building—

- (a) solid masonry balustrade walls shall —
 - (i) be tied to reinforced concrete or brick columns or bonded into return walls or reinforced brick piers;
 - (ii) where deemed necessary, be provided with expansion joints spaced not more than 8 m apart where such wall is supported by reinforced concrete or brick columns or reinforced brick piers and such expansion joints shall be formed in such columns or piers;
- (b) return walls and reinforced brick piers shall be bonded into the structural beam or slab, and return walls shall not be spaced further apart than 6,0 m for 230 mm thick walls or 5,0 m for 190 mm thick walls or 4,0 m for 110 mm thick walls;
- (c) brick balustrade walls shall be reinforced in the highest four bed joints with reinforcement consisting of two strands of galvanized steel wire not less than 3,5 mm in diameter, or two flat galvanized strips of equivalent area and such reinforcement shall have a lap of not less than 150 mm with the anchors to the supporting columns or piers.

KK11 FREE-STANDING WALLS

- KK11.1**
- (a) Where any free-standing wall is a masonry wall —
 - (i) the courses of such wall shall be laid in any acceptable fully-bonded pattern;
 - (ii) the height, thickness and pier size of such wall shall conform to the relevant values given in Table 5 and any cavities in piers in a wall constructed of hollow units shall be filled with concrete.
 - (b) In the case of a precast concrete fence the fixing of posts shall be in accordance with Appendix C of SABS 1372.

- KK11.2**
- (a) A damp-proof course shall not be installed in any free-standing wall.
 - (b) Where moisture is likely to be encountered from ground water, high density bricks with a water absorption of not more than 7% shall be used in any free-standing wall up to 150 mm above ground level.

KK11.3

- Where any wall consists of two or more sections of different thicknesses —
- (a) the thickness of the top section shall be less than that of any lower section;
 - (b) the height of the top section shall not be greater than 80% of the maximum height given in Table 5 for the thickness in question;
 - (c) the sum of the heights of the various sections of such wall shall not be greater than the maximum height given in Table 5 for the thickest section of such wall; and
 - (d) any piers used in the thickest section of such wall shall extend, without reduction in size, to the top of such wall.

TABLE 5 — FREE-STANDING WALLS

1	2	3	4	5
Nominal wall thickness, mm	Maximum height of wall above finished ground, m		Piers	
	Without piers	With piers	Nominal dimensions, (projection x width), mm	Max. spacing (centre to centre), m
90	0,8	1,2	200 x 290	1,8
110	1,0	1,4	240 x 230	1,8
140	1,3	1,6	300 x 290	2,0
190	1,5	2,0	400 x 290	2,5
230	1,8	2,3	480 x 350	3,5
290	2,2	2,6	400 x 290	4,5

Commentary: The following example assumes that it is desired to construct a wall of 1,8 m in height without using piers and that the upper section of the wall should be of reduced thickness. Figure 2 shows a possible configuration for such a wall.

From Table 5 it is evident that a wall without piers could be built to the desired height using a thickness of 230 mm. This thickness should therefore be used for the lower section of the wall. For the upper section (A in Figure 2) assume the use of a thickness of 110 mm. The maximum height of this section will be 80% of the relevant figure given in Table 5, i.e. 80% of 1,0 m. If this maximum figure is adopted the height of the lower section of the wall (B in Figure 2) will be restricted to 1,0 m. It should be noted that the height of section B can thus vary between 1,0 m and 1,8 m with the height of section A varying accordingly.

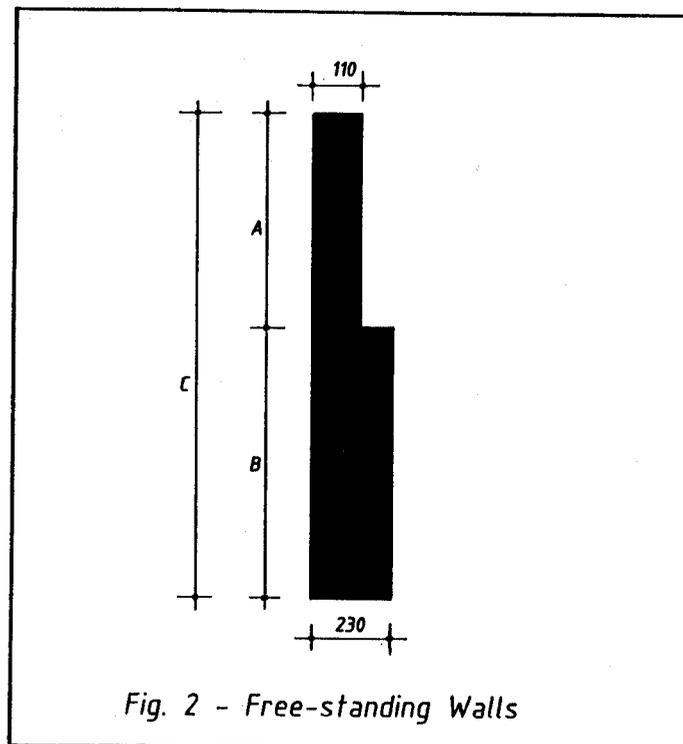


Fig. 2 - Free-standing Walls

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KK12

RETAINING WALLS OF MASONRY

KK12.1

Any masonry retaining wall, not being a basement or foundation wall of a building, constructed in accordance with these rules shall not be erected in a position where the ground or fill which it retains may be subjected to superimposed loads, other than that from pedestrian traffic, within a distance equal to the height of the fill retained by such wall.

KK12.2

Where any structure is to be erected on top of such wall the wall shall be designed in accordance with regulation B1: Provided that a wire fence not greater in height than 1,5 m shall not be regarded as a structure.

KK12.3

There shall be no surcharge of fill behind such wall within a distance equal to the height of the wall.

KK12.4

Movement joints shall be provided at distances apart not exceeding 10 m.

KK12.5

Subsoil drainage shall be provided behind such wall together with sufficient weep holes in such wall to prevent the accumulation of water.

KK12.6 No horizontal damp-proof course of sheet material shall be used in any such retaining wall.

KK12.7 Any masonry retaining wall shall —

- (a) be constructed of solid masonry units laid in any acceptable fully-bonded pattern;
- (b) not exceed the limits for height, wall thickness and pier size contained in Table 6 and where piers are indicated in such table, any length of wall shall be supported at each end by such a pier and all such piers in such wall shall project from the face of the wall which is not in contact with the fill, be bonded into the wall and extend to the full height of the wall.

TABLE 6 — RETAINING WALLS

1 Nominal wall thickness, mm	2 Max. height of fill to be retained, m	3 Piers		4 Max. spacing (centre to centre), m
		Nominal dimensions (projection x width), mm		
190	0,8	No piers required		
	1,1	300 x 190		2,0
	1,3	400 x 190		2,4
230	0,9	No piers required		
	1,4	360 x 230		2,5
	1,5	480 x 230		2,7
290	1,1	No piers required		
	1,5	300 x 290		3,0
390	1,4	No piers required		

KK13 ROOF ANCHORING

KK13.1 In the case of a wall erected of masonry units or of concrete a galvanized steel strap or wires shall be embedded in the wall at positions suitable for anchoring any timber roof truss, rafter or beam to such wall.

KK13.2 Such strap or wire shall extend into the wall to a depth of at least 300 mm in the case of a heavy roof (concrete or clay tiles or slate) or at least 600 mm in the case of a sheeted roof except that in the case where the depth of the masonry or in-situ concrete is less than 300 mm and 600 mm, respectively, such strap or wire shall extend as far as possible into such masonry or concrete.

KK13.3

- (a) Galvanized steel strap anchors shall be taken up over the top of the rafter or tie beam, bent down on the other side and nailed down from both sides, or galvanized roof ties shall be made up of two strands of wire which shall be taken up on either side of the rafter or tie beam, twisted together so as to have no slack, but not so as to overstrain the wire, and the free ends then nailed down to prevent untwisting.
- (b) Any roof truss, rafter or beam shall be fixed to any wall by using one of the following types of anchors:
 - (i) Type A: two strands of 4 mm galvanized steel wire;
 - (ii) Type B: 30 mm x 1,2 mm galvanized steel strap;
 - (iii) Type C: 30 mm x 1,6 mm galvanized steel strap.
- (c) For any roof truss, rafter or beam the type of anchor to be used shall be in accordance with Table 7.

TABLE 7 — TYPES OF ANCHOR

1	2	3	4
Roof slope, degrees	Max. roof truss, rafter or beam spacing, mm	Type of anchor required	
		Light roof	Heavy roof
Less than 15	760 1 050 1 350	A, B or C B or C C	Type A for all applications
15 to 30	760 1 050 1 350	A, B or C B or C C	
Greater than 30	Any	A, B or C	

KK13.4 In the case of a building of timber framed construction, provision for the anchoring of any timber roof truss, rafter or beam to the wall shall be made in the manner described in SABS 082.

KK14 WATER PENETRATION

- KK14.1** Any external wall of any building shall be —
- capable of satisfying the relevant requirements of the rain penetration test contained in rule **KK17**; or
 - a single leaf externally plastered block wall not less than 140 mm thick or a single leaf brick wall not less than 190 mm thick; or
 - a cavity wall built of masonry; or
 - a precast concrete wall forming part of a garage or garden store and having a nominal thickness not less than 40 mm providing that any joints in such wall are sealed; or
 - a timber framed wall built in accordance with SABS 082;

KK14.2 Notwithstanding the requirements of subrule **KK14.1(b)** any local authority may, in areas of prolonged heavy wind-driven rain, require that any masonry external wall shall be a cavity wall, or a double leaf wall with the inner face of the outer leaf bagged and painted with two coats of approved sealer.

KK15 DAMP-PROOF COURSE

KK15.1 Any wall or sleeper pier of a building shall be provided with a damp-proof course in such position and to an extent that will protect the wall against rising damp and the interior of the building against ingress of moisture from abutting ground.

- KK15.2**
- Any material used as a damp-proof course shall conform to the relevant requirements contained in SABS 248, SABS 952 or SABS 298;
 - In any masonry wall a damp-proof course shall be installed —
 - at the level of the top of a concrete floor slab resting on the ground; or
 - where applicable, below any ground floor timber beam or joist.
 - In any timber framed wall a damp-proof course shall be installed between the bottom plate of the wall and any foundation wall or concrete floor slab.
 - In the case of any solid masonry wall or timber framed wall any damp-proof course shall extend over the full thickness of such wall.
 - In the case of any masonry cavity wall —
 - each leaf of such wall shall be provided with its own damp-proof course which shall extend over the full thickness of such leaf, in which case the cavity must extend 150 mm below the damp-proof course; or
 - each leaf of such wall shall be covered by a membrane which extends across the cavity provided that the position of the membrane at the inner leaf is higher than its position at the outer leaf; and

- (iii) where necessary, weep holes to prevent build-up of water in the cavity shall be provided in the external leaf of every cavity wall, spaced not more than 1 m apart, in the masonry unit course immediately below the damp-proof course contemplated in paragraph (i) or in the masonry unit course immediately above the membrane contemplated in paragraph (ii).
- (f) No horizontal damp-proof course shall be installed less than 150 mm above the level of the adjacent finished ground.
- (g) Transverse joints in the damp-proof course shall be overlapped to a minimum distance of 150 mm and at junctions and corners to a distance equal to the full thickness of the wall or the leaf, as the case may be.
- (h) (i) Where any part of any wall of a room is so situated that the ground will be in contact therewith it shall be protected by a vertical waterproof membrane or by a drained cavity which shall extend below the level of the floor of such room;
(ii) drainage shall be provided at the base of such wall to prevent water accumulating there.

KK16 BEHAVIOUR IN FIRE

Any wall shall comply with the relevant requirements for fire resistance, non-combustibility and, where appropriate, wall lining index set out in rules **TT2, TT5, TT6, TT7, TT8, TT9, TT10, TT15, TT39, TT40, TT41, TT45, TT49, TT52** and subrules **TT18.1** and **TT19.1**, as the case may be.

KK17 RAIN PENETRATION TESTS FOR WALLS

KK17.1 TEST METHOD

The wall shall be thoroughly air-dry before being tested. In the case of a masonry or similar wall the inner surface may be lime washed or other means may be adopted to facilitate the detection of moisture which has penetrated through the wall. The portion of the outer surface under test shall then be continuously sprayed with water in the form of a finely divided spray distributed over the whole area under test at the rate of 40-50 mm depth of water per hour. Spraying shall be conducted in a still atmosphere and shall be continued for the minimum period required in terms of column 3 of Table 8 (depending upon the mean annual rainfall and the hourly mean wind speed for the locality concerned given in columns 1 and 2 of such table relative to such period in each case) or until the first signs of dampness appear on the inner surface of the wall if such signs appear before the expiry of such period. In the case of any timber framed wall the covering of such wall shall be removed after the required test period in order to ascertain whether any moisture has penetrated to the interior of such wall and if so, whether water has been retained within the interior.

KK17.2 TEST CRITERIA

The test wall shall, in regard to rain penetration, be considered to comply with the requirements of regulation **K2** where -

- (a) no moisture has penetrated to the inner surface of the wall within the relevant minimum test period given in column 3 of Table 8, and
- (b) in the case of a timber framed wall, there is no evidence of water having been retained within the cavity in the wall.

TABLE 8 — TEST PERIOD

1	2	3
Mean annual rainfall*, mm	Hourly mean wind speed*, m/s	Min. period, h
More than †1 000	20 25 30	14 19 24
600-1 000	20 25 30	10 15 20
200-600	20 25 30	6 11 16
0-200	20 25 30	2 7 12

*See SABS 0160 Code of Practice for the general procedures and loadings to be adopted for the design of buildings (Appendices D and F).

†1 000 is based on maximum rainfall of 1 400 mm . Where the actual annual rainfall is known to exceed 1 400 mm the figures for duration of test may be linearly extrapolated.

PART L ROOFS

REGULATIONS

L1 GENERAL REQUIREMENT

The roof of any building shall be so constructed that it will —

- (a) resist any forces to which it is likely to be subjected;
- (b) be durable and waterproof;
- (c) not allow the accumulation of any rainwater upon its surface; and
- (d) as part of a roof and ceiling assembly provide adequate height in any room immediately below such assembly.

L2 FIRE RESISTANCE AND COMBUSTIBILITY

The fire resistance of any roof or roof and ceiling assembly complete with light fittings or any other component which penetrates the ceiling, shall be appropriate to its use and where necessary such roof or roof and ceiling assembly shall be non-combustible.

L3 DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulations L1 and L2 shall be deemed to be satisfied where any roof or roof and ceiling assembly, as the case may be, complies with Part L of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

LL1 GENERAL

The regulations contained in Part L of the National Building Regulations shall be deemed to be satisfied where —

- (a) any roof or roof/ceiling assembly is the subject of a rational design in accordance with the requirements contained in Parts B and C and such roof or roof/ceiling assembly complies with deemed-to-satisfy rules contained in provision LL4 and LL5 of this Part; or
- (b) the construction of any roof contemplated in provision LL2 complies with the requirements contained in that rule.

LL2 EMPIRICAL RULES FOR THE CONSTRUCTION OF ROOFS

Where any roof is to be supported on the walls of any building, contemplated in rule KK2 of this code, such roof shall be constructed in accordance with rules LL3, LL4 and LL5.

LL3 CONSTRUCTION AND FIXING OF STRUCTURAL ROOF COMPONENTS

LL3.1

The location and dimensions of any part of any roof shall be such that the minimum height requirements contained in Part C are satisfied.

LL3.2

Roof timbers shall comply with the requirements of the relevant of SABS 563, SABS 653, SABS 876, SABS 1089 or SABS 1245.

LL3.3 The requirements of subrules **LL3.4** and **LL3.5** shall apply only to single or double pitched Howe-type trusses, with a span of not more than 10 m, supported at heel joints only and having bays of equal lengths of not more than 1,5 m .

- LL3.4**
- (a) Where the roof covering is of the class given in column 1 of Table 1 the size of rafter (top chord), tie-beam (bottom chord) and the grade of timber to be used shall be selected from such table in such a way that the desired truss span does not exceed the relevant figure for maximum truss span given in column 4, 5 or 6, as the case may be.
 - (b) All web members shall be not less than 38 mm x 114 mm Grade 4 timber.
 - (c) Where rafter and tie-beam sizes are to be determined from Table 1, the slope of the roof shall —
 - (i) be not less than 15° nor more than 30° for Class A or Class C covering; and
 - (ii) be not less than 17° nor more than 35° for Class B covering.

TABLE 1 — MAXIMUM TRUSS SPANS FOR VARIOUS RAFTER AND TIE-BEAM SIZES

1 Roof covering	2 Truss member	3 Nominal timber size, mm	4, 5, 6 Max. span, m		
			4 Timber grade 4	5 Timber grade 6	6 Timber grade 8
			Class A*	Rafter	38 x 114 38 x 152 38 x 228
	Tie-beam	38 x 114 38 x 152 38 x 228	3,1 4,5 7,1	4,5 6,4 10,0	6,2 8,3 10,0
Class B†	Rafter	38 x 114 38 x 152 38 x 228	6,0 8,2 10,0	9,0 10,0 10,0	10,0 10,0 10,0
	Tie-beam	38 x 114 38 x 152 38 x 228	4,7 5,9 7,2	6,7 8,5 10,0	9,4 10,0 10,0
Class C‡	Rafter	38 x 114 38 x 152 38 x 228	6,2 8,0 10,0	9,0 10,0 10,0	10,0 10,0 10,0
	Tie-beam	38 x 114 38 x 152 38 x 228	4,5 5,9 8,7	6,7 8,7 10,0	9,0 10,0 10,0

*Class A roof covering includes metal sheets and fibre-cement sheets.
 †Class B roof covering includes concrete tiles, clay tiles or tiles of similar materials and thatch.
 ‡Class C roof covering includes metal roof tiles.

Commentary: Table 1 may seem confusing or even incorrect since the same nominal timber sizes appear to be capable of supporting either a Class A (light) or a Class B (heavy) roof covering and in the case of the heavier covering, greater truss spans are permitted. This apparent anomaly is negated when this table is read in conjunction with subrule LL3.6, as the centre-to-centre spacing of trusses supporting Class B roof covering is limited to a maximum of 760 mm compared with 1400 mm for Class A roof covering. The load per truss for a roof supporting a Class B covering is therefore less than that for a truss supporting a Class A covering.

It would appear from the table that in certain cases the use of a better grade timber is of no advantage as it does not lead to any increase in the maximum span that is permitted.

The figures have been included in order to complete the table but the restriction on span is artificial in the sense that it is not directly related to the capability of the timber. The fact that no span of more than 10 m has been included in the table serves only to draw attention to the fact that any roof supported on walls complying with the rules contained in Part K is restricted to a maximum span of 10 m. It is also important to note that the values quoted in this table should only be used subject to the further limitations that —

- (a) the truss configuration is that of a Howe-type truss as shown in Figure 1 and the maximum span is limited to 10 m ;
- (b) the slope of the roof is —
 - (i) more than 15 ° and less than 30 ° for Class A or Class C roof covering; or
 - (ii) more than 17 ° and less than 35 ° for Class B covering.

It is always permissible to use a roof slope outside the range given above provided that the proposed slope complies with Table 4 but, as in any other case where it is desired to depart from the limitations on the use of Table 1, a rational design of the proposed truss, including calculations, must then be submitted to the local authority.

It should be noted that factory manufactured trusses employing metal plate connectors, although commonly used in house construction, do not generally comply with the requirements of Table 1. Design data, if required, can be obtained from the manufacturer.

The following examples indicate how to use Table 1:

Example No. 1

Roof pitch 22,5 ° (within range permitted in LL3.4)
 Max. truss span 8,0 m
 Class A roof covering

Solution

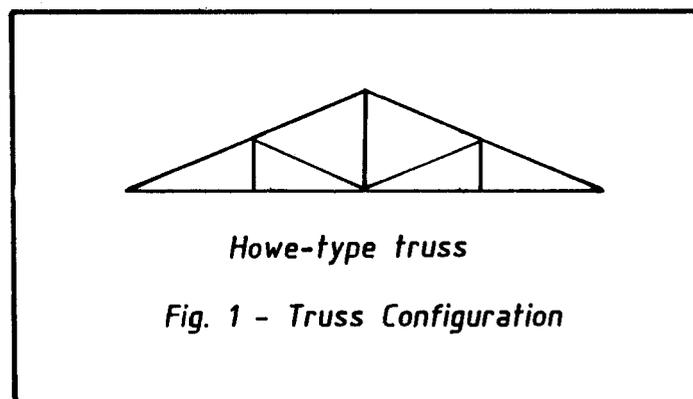
Tie-beam size: 38 mm x 228 mm (grade 6) or 38 mm x 152 mm (grade 8)
 Rafter size: 38 mm x 228 mm (grade 6)
 Max. truss spacing 1400 mm

Example No. 2

Roof pitch 17,5 ° (pitch is just within range permitted in LL3.4)
 Max truss span 10,0 m
 Class B roof covering

Solution

Tie-beam size: 38 mm x 152 mm (grade 8)
 Rafter size: 38 mm x 152 mm (grade 6 or grade 8)
 Max. truss spacing 760 mm



- LL3.5**
- (a) The number of connecting devices to be used at each intersection between two members at any heel joint or any splice in a truss shall be determined from Table 2.
 - (b) In the case of any joint, other than a heel joint or splice, one 10 mm bolt plus four clinched 90 mm x 4 mm nails shall be used.

TABLE 2 — NUMBER OF CONNECTING DEVICES REQUIRED IN HEEL JOINTS AND SPLICES

1	2	3	4	5	6	7	8	9	10
Span, m	3 (90 mm x 4 mm) nails plus 10 mm bolts as specified below			16 mm bolts only			50 mm toothed ring connectors		
	No. of bolts			No. of bolts			No. of connectors		
	Class A	Class B	Class C	Class A	Class B	Class C	Class A	Class B	Class C
3	2	1	2	2	1	1	1	1	1
4	3	2	2	2	2	2	1	1	1
5	3	2	3	2	2	2	2	1	2
6	4	3	3	3	2	2	2	2	2
7	5	3	4	3	2	3	2	2	2
8	5	4	5	3	3	3	2	2	2
9	6	4	5	4	3	3	3	2	2
10	6	5	6	4	3	4	3	2	3

NOTE: Class A, Class B and Class C refer to the class of roof covering given in Table 1.

- LL3.6**
- The centre-to-centre spacing of trusses relevant to the roof covering to be applied shall not exceed:
- (a) Sheets, either metal or fibre cement..... 1 400 mm
 - (b) Concrete tiles, clay tiles or tiles of similar material 760 mm
 - (c) Metal tiles..... 1 050 mm

- LL3.7**
- (a) Timber roof trusses and other roof framing shall have all joints accurately cut, securely made and so fitted that the component parts are drawn tightly together.
 - (b) Any trussed roof shall be provided with approved bracing to prevent buckling of rafters, tie-beams and long web members and to keep trusses upright.
 - (c) No member of any truss shall have a length greater than sixty times its least dimension.

- LL3.8**
- (a) Where rafter construction is used in place of roof trusses and the roof covering is of the class given in column 1 of Table 3 the size of rafter and grade of timber to be used shall be selected from such table in such a way that the rafter span does not exceed the relevant figure for maximum rafter span given in columns 3 to 14, as the case may be.
 - (b) Where rafter spacing differs from that in Table 3, intermediate values of maximum rafter span may be interpolated within the range of values given for the relevant timber grade.

- LL3.9**
- (a) Any purlin shall have a minimum nominal width and depth of 50 mm and 76 mm respectively and the maximum centre-to-centre spacing between purlins shall be 1,2 m .
 - (b) All joints in adjacent purlins shall be staggered.

LL3.10

- (a) In the case of a timber framed building any roof truss, rafter or beam shall be securely fastened to the wall construction in accordance with SABS 082.
- (b) Every timber roof truss, rafter or beam supported by a wall erected of masonry units or of concrete shall be securely fastened to such wall by a galvanized steel strap or galvanized steel wires as prescribed in subrule KK13.1.
- (c) Any device used for the fastening of any roof covering shall be resistant to corrosion.

TABLE 3 — MAXIMUM SPANS FOR RAFTERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Roof covering	Nominal timber size, mm	Max. rafter span, m											
		Timber grade 4				Timber grade 6				Timber grade 8			
		Rafter spacing, mm				Rafter spacing, mm				Rafter spacing, mm			
		600	760	1 050	1 400	600	760	1 050	1 400	600	760	1 050	1 400
Class A and Class C	38 x 114	2,6	2,5	2,2	2,0	3,0	2,8	2,5	2,2	3,2	3,0	2,7	2,4
	38 x 152	3,5	3,3	3,0	2,7	4,0	3,7	3,3	3,0	4,3	4,0	3,6	3,2
	38 x 228	5,3	5,0	4,5	4,0	6,0	5,5	5,0	4,5	6,4	5,9	5,4	4,8
	50 x 114	2,9	2,7	2,4	2,2	3,3	3,0	2,7	2,5	3,5	3,2	2,9	2,6
	50 x 152	3,9	3,6	3,3	2,9	4,4	4,0	3,7	3,3	4,7	4,3	3,9	3,5
	50 x 228	5,8	5,4	4,9	4,4	6,5	6,1	5,5	4,9	6,5	6,5	5,9	5,3
	76 x 114	3,3	3,1	2,8	2,5	3,8	3,5	3,2	2,8	4,0	3,7	3,4	3,0
	76 x 152	4,5	4,1	3,8	3,4	5,0	4,6	4,2	3,8	5,4	5,0	4,5	4,0
	76 x 228	6,5	6,2	5,6	5,0	6,5	6,5	6,3	5,7	6,5	6,5	6,5	6,1
Class B	38 x 114	1,8	1,6			2,0	1,8			2,1	2,0		
	38 x 152	2,4	2,2			2,7	2,5			2,9	2,7		
	38 x 228	3,6	3,3			4,0	3,7			4,3	4,0		
	50 x 114	1,9	1,8			2,2	2,0			2,3	2,2		
	50 x 152	2,6	2,4			2,9	2,7			3,1	2,9		
	50 x 228	3,9	3,6			4,4	4,1			4,7	4,4		
	76 x 114	2,2	2,1			2,5	2,3			2,7	2,5		
	76 x 152	3,0	2,8			3,4	3,1			3,6	3,4		
	76 x 228	4,5	4,2			5,0	4,7			5,0	5,0		

NOTE: Class A, Class B and Class C refer to the class of roof covering given in Table 1. The maximum rafter spans given in Table 3 are based upon use in a roof having a slope of less than 10°. In the case of the greater slopes typical of Class B roof coverings the figures may prove conservative because strength rather than deflection becomes the criterion.

LL4

FIRE RESISTANCE AND COMBUSTIBILITY

The fire resistance of any roof/ceiling assembly complete with light fittings or any other component which penetrates the ceiling and the degree of non-combustibility of such assembly shall comply with the requirements contained in rule TT5, TT12, TT49 and VV3, as the case may be.

LL5

WATERPROOFING

LL5.1

For the purpose of runoff of water any roof with a covering of one of the materials referred to in column 2 of Table 4 shall, subject to the limitations on roof slope contained in subrule LL3.4, be constructed to a slope not less than the relevant figure given in column 3 and such covering shall, where applicable, be provided with end laps not less than the relevant figure given in column 4 or 5, as the case may be.

TABLE 4 — MINIMUM ROOF SLOPES AND SHEET END LAPS

1	2	3	4	5
Class	Roof covering	Minimum angle of slope, degrees	Minimum end lap, mm	
	Description		End laps sealed	End laps not sealed
A	Corrugated metal, plastic or glass-reinforced plastic sheets (including box rib)	5	250	Not permitted 250 225 200 150
		11	150	
		15	150	
		17	150	
		22	150	
Corrugated fibre-cement sheets	11	200	300	
	15	175	275	
	17	150	250	
	22	150	200	
	26	150	150	
Long span specialized metal sheets	5	As required by the local authority		
Single length long span and specialized sheets	3			
B	Fibre-cement slates i) with an approved underlay ii) without an approved underlay	10		
		17		
	Single-lap concrete or clay interlocking tiles; concrete, clay plain tiles or shingles i) with an approved underlay ii) without an approved underlay	17		
		26		
	Natural slate on open battens i) with an approved underlay ii) without an approved underlay	20		
30				
Thatch: Thickness of 150 mm Thickness of 300 mm	45			
	35			
C	Metal tiles i) with an approved underlay ii) without an approved underlay	10		
		15		

NOTE: When metal roof tiles are used over an existing roof, the existing roof slope may be retained.

LL5.2 FLASHING

Flashing shall be used where a roof abuts against a wall or around any projection through a roof covering and at any other place where it is deemed necessary by the local authority.

LL5.3 FLAT ROOFS

- (a) Where a nominally flat roof of boarded or concrete construction is used it shall be provided with an impervious surface and laid to a fall of not less than 1 in 50.
- (b) Where a parapet wall abuts a covered flat roof the edges of the waterproofing material shall be turned up underneath corrosionproof metal cover flashing which is tucked into the horizontal joint of the brickwork at least two courses above the roof level.
- (c) Where any nominally flat roof is to be subjected to pedestrian or vehicular traffic any waterproofing membrane applied to it shall be protected against damage.

PART M STAIRWAYS

REGULATIONS

M1 GENERAL REQUIREMENT

(1) Any stairway, including any wall, screen, railing or balustrade to such stairway, shall be capable of safely sustaining any loads to which it is likely to be subjected and shall permit safe movement of persons from floor to floor.

(2) Any such stairway shall have dimensions appropriate to its use.

M2 FIRE REQUIREMENT

A stairway contemplated in regulation M1 shall comply with the relevant requirements in Part T of these regulations.

M3 DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulations M1 and M2 shall be deemed to be satisfied where the design of any stairway complies with part M of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

MM1

GENERAL

The regulations contained in Part M of the National Building Regulations shall be deemed to be satisfied where —

- (a) any stairway, including any wall, screen, railing or balustrade to such stairway, is the subject of a rational design in accordance with the requirements contained in Part B; and
- (b) the construction of any stairway, including any handrail to such stairway, complies with deemed-to-satisfy rules contained in the following provisions of this Part.

MM2

DIMENSIONAL REQUIREMENTS

MM2.1

The headroom at any point on any stairway shall be not less than 2,1 m, measured vertically from the pitch line, and the width of any stairway, measured to any enclosing wall or balustrade, shall be not less than 750 mm .

MM2.2

- (a) Any landing serving two flights in the same straight line shall —
 - (i) have a length of not less than 900 mm; and
 - (ii) have a width of not less than that of such flights.
- (b) No flight of stairs shall have a vertical rise greater than 3 m between landings.
- (c) No door shall open onto a stairway unless such door opens onto a landing and the width of such landing shall be not less than that of such door.

MM2.3

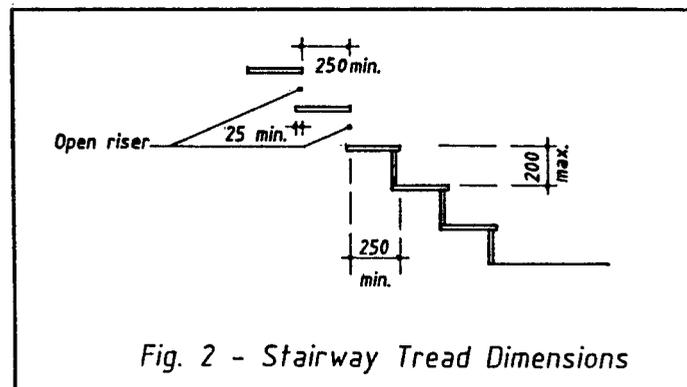
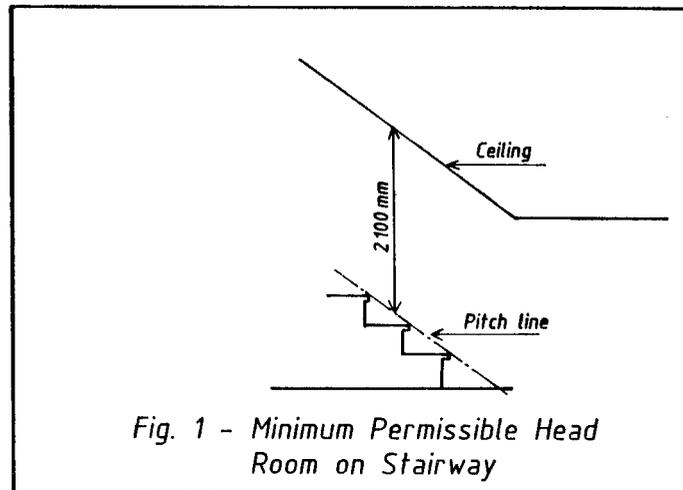
The rise of any step shall not exceed 200 mm .

MM2.4

The going and width of any tread shall be not less than 250 mm: Provided that where the stairway does not have solid risers, each tread shall overlap the next lower tread by not less than 25 mm .

MM2.5 The variation in the dimensions of the risers and the going of the treads in any one flight shall be not more than 6 mm: Provided that this requirement shall not be construed as prohibiting the use of tapered treads in the same flight as treads that are not tapered.

Commentary: Figures 1 and 2 illustrate respectively, the measurement of headroom on stairways and the dimensions of treads and risers.

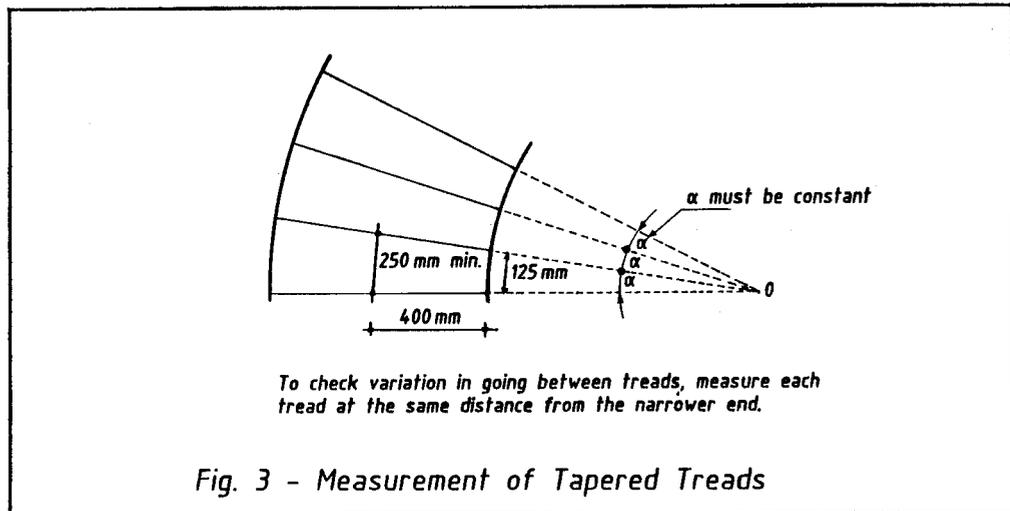


Drg.11017/E

MM2.6 Any tapered tread not being a winder and not forming part of a spiral stairway shall —

- (a) be so designed that, in respect of that part of the tread which is 400 mm from the narrower end of such tread, the going —
 - (i) shall comply with the requirement contained in subrule **MM2.4**; or
 - (ii) shall be equal, in the case of a flight containing both tapered and non-tapered treads, to the going of the non-tapered treads;
- (b) have a minimum going of 125 mm;
- (c) be so constructed that the angle between successive risers, measured in the horizontal plane, shall be constant; and
- (d) comply with the requirement for variation in going contained in subrule **MM2.5**; where such variation is in each case measured at the same distance from the narrower end of each tread.

Commentary: Figure 3 illustrates measurement of a tapered tread.

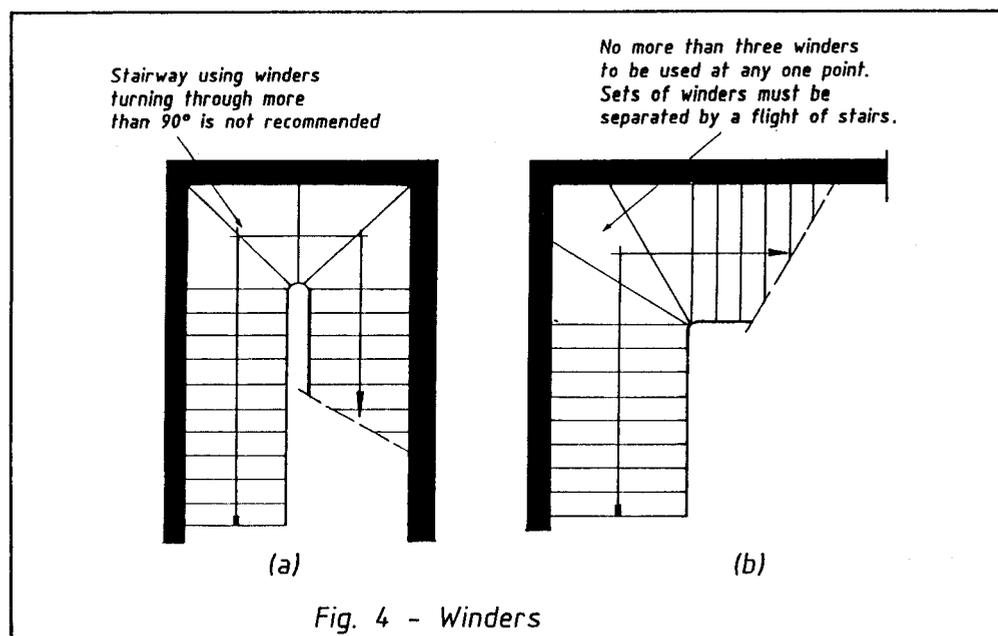


Drq.11018/E

MM2.7 Stairways incorporating winders shall be permitted only in dwelling houses and within individual dwelling units, and at any point on such stairway —
 (a) there shall be not more than three successive winders; and
 (b) such winders shall not turn through more than 90°.

MM2.8 Any spiral stairway shall have a width of not more than 800 mm and such stairway shall not be used —
 (a) as part of any emergency route;
 (b) in any occupancy classified in terms of regulation A20 as A1, A2, A3, A4, A5, C1, E1, E2, F1, G1, H1, or H2.

Commentary: Figure 4 illustrates permissible use of winders.



Drq.11019/E

MM3 PREVENTION AGAINST FALLING

- (a) Any flight of steps which contains more than three risers shall have protection on each side provided by a secure wall, screen, railing or balustrade which shall be not less than 1 m high and so erected that any such wall, screen, railing or balustrade in any occupancy classified E2, E3, H1, H2 or H3 shall not have any opening that permits the passage of a 100 mm diameter ball: Provided that such protection in any occupancy not being an occupancy classified E2, E3, H1, H2, H3 or H4, shall consist of at least a handrail and one other rail midway between such handrail and the stairtread.
- (b) (i) Any flight of steps which contains more than five risers shall be provided with at least one continuous handrail extending the full length of such flight: Provided that this requirement shall not apply to any building classified H4, or within individual dwelling units in an occupancy classified H3.
 - (ii) Such handrail shall be securely fixed to such wall, screen, railing or balustrade at a height of not less than 850 mm and not more than 1 m measured vertically from the pitch line to the upper surface of the handrail.
 - (iii) Such handrail shall be of such a design and be so fixed that there shall be no obstructions on, above or near to it which may obstruct the movement of any hand moving along it.
- (c) (i) Subject to paragraph (b)(i), any flight which is less than 1,1 m wide shall have a handrail on at least one side and where the width of any flight is more than 1,1 m, handrails shall be provided on both sides of such flight.
 - (ii) Such handrails shall comply with the requirements contained in paragraphs (b)(ii) and (b)(iii).

MM4 FIRE REQUIREMENTS

Any stairway shall comply with the requirements contained in rules TT5, TT7, TT19, TT20, TT21, TT22, TT23, TT24, TT25, TT26 and TT27, as the case may be.

PART N GLAZING

REGULATIONS

N1 TYPE AND FIXING OF GLAZING

(1) Any material used in the glazing of any building shall be of a secure and durable type and shall be fixed in a manner and position that will ensure that it will —

- (a) safely sustain any wind loads to which it is likely to be subjected;
- (b) not allow penetration of water to the interior of the building; and
- (c) be apparent, in the case of clear glazing, to any person approaching such glazing.

(2) Glass, plastics and organic coated glass shall be selected in order to provide, in the case of human impact, a degree of safety appropriate in relation to —

- (a) the position of the glazed area; and
- (b) the number and likely behaviour pattern of persons expected to be in close proximity to such glazed area.

(3) The requirements of subregulations (1) and (2) shall be deemed to be satisfied where the glazing material is selected, fixed and marked in accordance with Part N of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

NN1 GENERAL

The regulation contained in Part N of the National Building Regulations shall be deemed to be satisfied where the type, method of installation and marking of any glazing comply with deemed-to-satisfy rules contained in the following provisions of this Part.

NN2 INSTALLATION OF GLAZING

NN2.1

In any vertical glazing installation, any pane of glass and the fixing of such pane shall comply with the following requirements:

- (a) Where such pane is to be exposed to the effect of wind, the thickness of such pane in relation to its area shall be in accordance with SABS 0137.
- (b) Such pane shall be fixed in the frame in accordance with any suitable method described in SABS 0137 and such frame shall be so installed that it is capable of sustaining the total wind load for which such pane was designed.
- (c) Notwithstanding the requirements of paragraph (a), the nominal thickness of a pane of glass shall be not less than that given in Table 1.

TABLE 1 — GLASS DIMENSIONS

1	2
Nominal glass thickness, mm	Maximum size of pane, m ²
3	0,75
4	1,5
5	2,1
6	3,2

NN2.2

Any pane of glass, not being a door leaf contemplated in subrule NN2.3, which is to be installed without the support of a frame, shall be in accordance with SABS 0137.

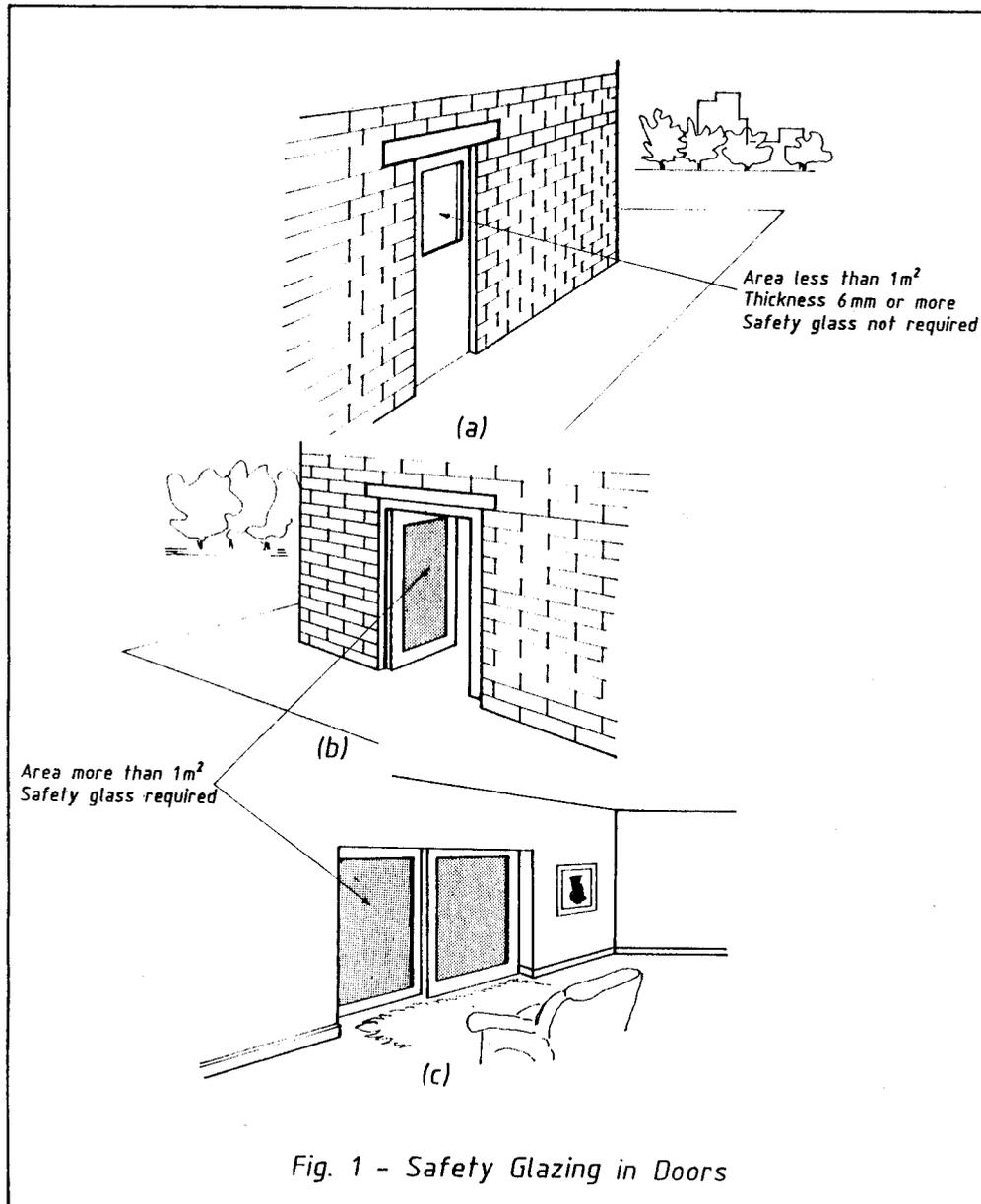
NN2.3 Any door leaf made entirely of glass which is not fully contained in a frame shall be in accordance with SABS 0137: Provided that such requirements shall not apply to any cupboard door.

NN2.4 Where clear glazing is used and is not likely to be apparent to or suspected by any person approaching it, such glazing shall bear markings which shall render such glazing apparent to such person.

NN3 SAFETY GLAZING

NN3.1 Any pane of glass installed in any door shall, where not made of safety glass, be not more than 1 m² in area and shall have a nominal thickness of not less than 6 mm .

Commentary: Figure 1 illustrates requirements for safety glazing in doors.



NN3.2

Where any window is not guarded by a barrier to reduce the possibility of persons coming into contact with any glass installed in such window —

- (a) the sill of such window shall be at a level of not less than 300 mm from the floor; or
- (b) any glass used in such window shall comply with the requirements of subrule **NN3.1**:

Provided that where, in the opinion of the local authority, the window is so placed that persons are likely on normal traffic routes to move directly towards such window, such sill shall be at a level of not less than 800 mm from the floor or any glass installed in such window shall comply with the requirements of subrule **NN3.1**.

Commentary: The barrier referred to in subrule NN3.2 could be any feature, i.e. a heavy bar across the window or a flower box placed in front of the window that will provide a physical or visual barrier between the glass and a person.

A hazard can be created where any window is of such a size that there is glass at a level below that of the normal line of sight of any person approaching such window as the presence of the glass may then not be obvious and the window may be mistaken for an opening. It must also be considered that should a person trip or fall when approaching such window there is a greater possibility of falling against and breaking low-level glass than of breaking glass higher up in the window. The situation becomes progressively more dangerous as the presence of the glass becomes less obvious. Thus the most dangerous situation would be an uninterrupted sheet of glass extending to floor level. Where the window is not in a direct line of travel, a sill or some clearly visible division such as a glazing bar or transom at a height of at least 300 mm from the floor would usually be sufficient to give warning of the presence of a window but, where the window is so situated that it appears to be in an extension of the normal path of travel, it might be considered advisable to increase this height to as much as 800 mm before safety is achieved. Where it is desired to retain a low sill and omit any other form of demarcation, safety glass should be used or, if it is desired to use ordinary glass, the area of the glass should be not more than 1 m² and the thickness should be not less than 6 mm.

It should be noted that where a local authority considers a window to be in a dangerous position it has the discretion to insist that the sill height be at least 800 mm, or that the glass used below that level complies with the requirements for glass used in a door (see subrule NN3.1).

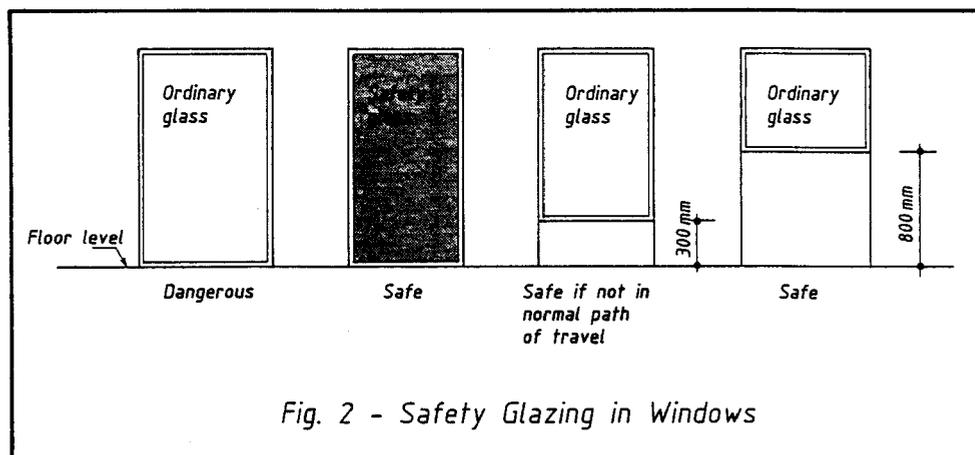
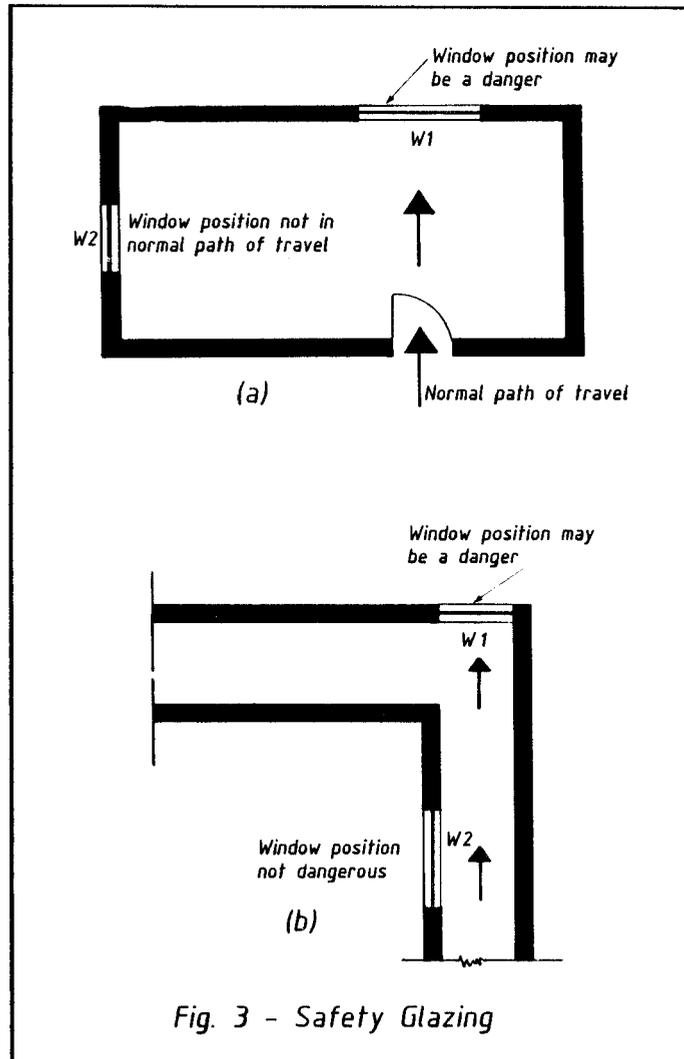


Fig. 2 - Safety Glazing in Windows

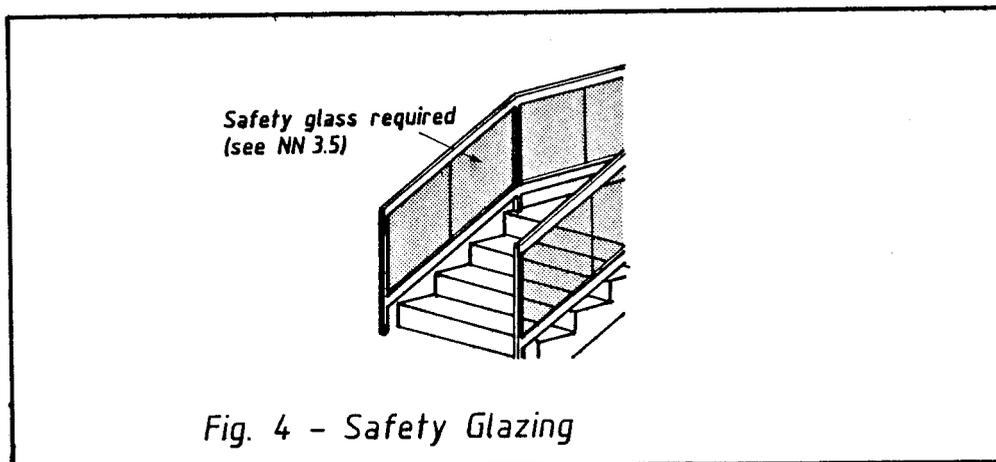
In Figure 3(a) and (b), windows W1 are in the normal path of travel and may present a danger. If so required by a local authority, any glass installed in these windows with an area of more than 1 m² and at a height of less than 800 mm from floor level will have to be safety glass. Windows W2, on the other hand, are not in as dangerous a position and in accordance with subrule NN3.2 the height requirement for the provision of safety glazing is 300 mm.



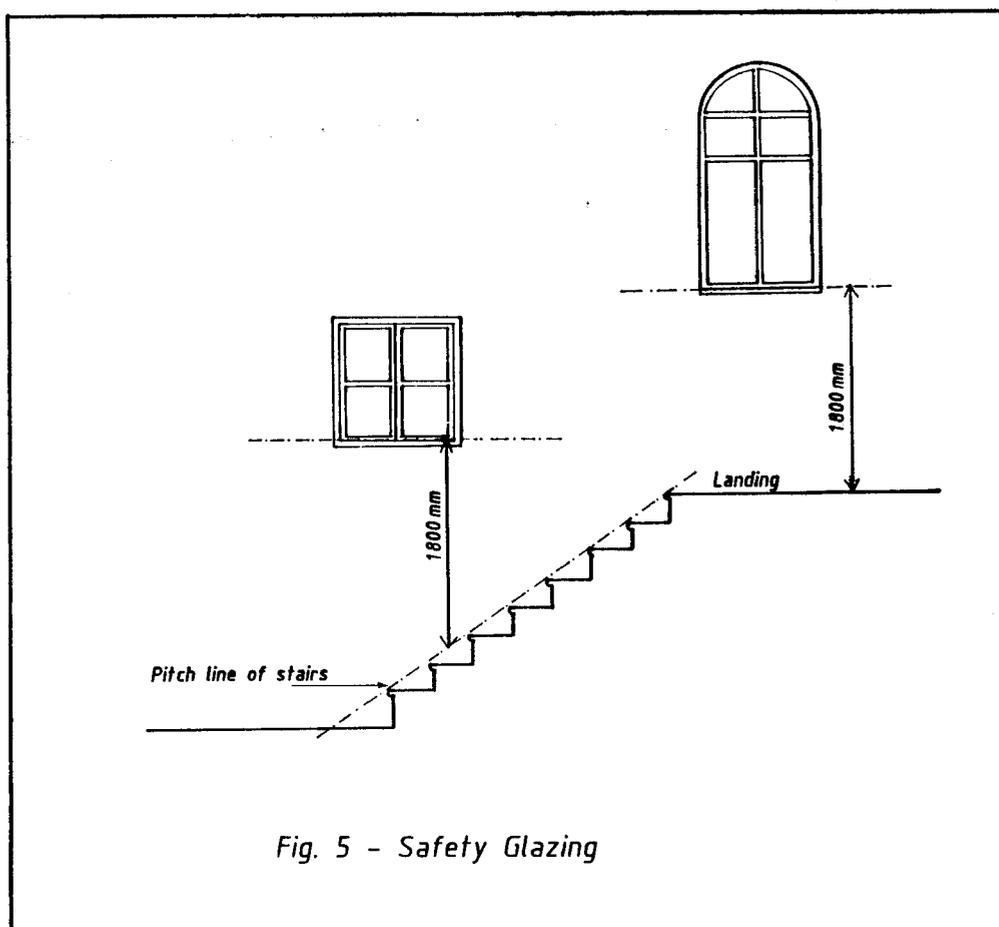
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- NN3.3** Where any bath enclosure or shower cubicle is constructed of glass such glass shall be safety glass.
- NN3.4** Any glass used in any shopfront and having an area of more than 1 m² shall be safety glass.
- NN3.5** Where glass is used in any wall or balustrade to a stairway or ramp and is less than 1,8 m above the pitch line of such stairway or the surface of such ramp or the surface of any landing forming part of such stairway or ramp, such glass shall be safety glass.

Commentary: Figure 4 illustrates use of safety glazing in a balustrade to a stairway.



If it is required to locate a window at a distance less than 1 800 mm above the pitch line of the stairs or landing as the case may be, it must be glazed with safety glass (see Figure 5).



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NN3.6

Where in these rules the use of safety glass is required, such requirement shall not be construed as meaning that other safety glazing materials complying with the requirements contained in SABS 1263 may not be used.

SABS 0400-1990

100

PART O LIGHTING AND VENTILATION

REGULATIONS

O1 LIGHTING AND VENTILATION REQUIREMENT

(1) Any habitable room, bathroom, shower-room and room containing a WC pan or urinal, or any room which is a parking garage shall be provided with a means of lighting and ventilation which will enable such room to be used, without detriment to health or safety or causing any nuisance, for the purpose for which it is designed.

(2) The requirement of subregulation (1) shall be deemed to be satisfied where —

(a) subject to the requirements of subregulation (3), such room is provided with one or more openings for natural light and ventilation in accordance with Part O of section 3 of SABS 0400; or

(b) such room is provided with artificial lighting and ventilation in accordance with the provisions of Part O of section 3 of SABS 0400.

(3) (a) Notwithstanding the provision of openings for natural light in accordance with subregulation (2)(a) any room contemplated in subregulation (1) or any corridor, lobby or staircase serving such room shall be provided with a means of artificial lighting —

(i) for periods when natural lighting is inadequate; or

(ii) where the size or shape of any such room, or the glazing material used in any such opening, will not permit sufficient natural light effectively to illuminate all parts of such room.

(b) Notwithstanding the provision of openings for natural ventilation in accordance with subregulation (2)(a) any room subject to the Machinery and Occupational Safety Act, 1983 (Act No. 6 of 1983), shall in terms of the said Act be provided with artificial ventilation as prescribed by such Act, and any room contemplated in subregulation (1) which is —

(i) a room which, due to conditions of high temperature, may be dangerous to safety or health;

(ii) a room where there will be dust, gas, vapour or volatile matter which may be dangerous to safety or health; or

(iii) used for any purpose for which natural ventilation is not suitable, shall be provided with a means of artificial ventilation.

O2 SPECIAL PROVISION OF NATURAL LIGHTING

Any habitable room in any dwelling house or dwelling unit, or any bedroom in any building used for residential or institutional occupancy shall, notwithstanding the provision of artificial lighting, be provided with at least one opening for natural light in accordance with subregulation O1(1).

O3 APPROVAL OF ARTIFICIAL VENTILATION SYSTEMS

No person shall without the prior written approval of the local authority install any artificial ventilation system in any building: Provided that this prohibition shall not apply in the case of room air conditioners or other individual appliances installed for comfort.

O4 DESIGN OF ARTIFICIAL VENTILATION SYSTEMS

Any rational design of an artificial ventilation system shall be carried out by or under the supervision of a professional engineer or other approved competent person and such engineer or person shall certify that the system has been designed to comply with regulation O1.

O5 ARTIFICIAL VENTILATION PLANT

(1) Any plant forming part of an artificial ventilation system shall be so designed, located and protected that —

(a) any condensate from such plant cannot be the cause of danger or nuisance to the public;

(b) inspection and servicing can be undertaken; and

(c) unauthorized persons cannot tamper with such plant.

(2) The requirements of subregulation (1) shall be deemed to be satisfied where the design, location and protection of such plant comply with Part O of section 3 of SABS 0400.

O6 TESTING OF ARTIFICIAL VENTILATION SYSTEMS

The owner shall at acceptable intervals of time submit to the local authority test reports indicating that any artificial ventilation system installed in terms of these regulations is operating in the designed manner.

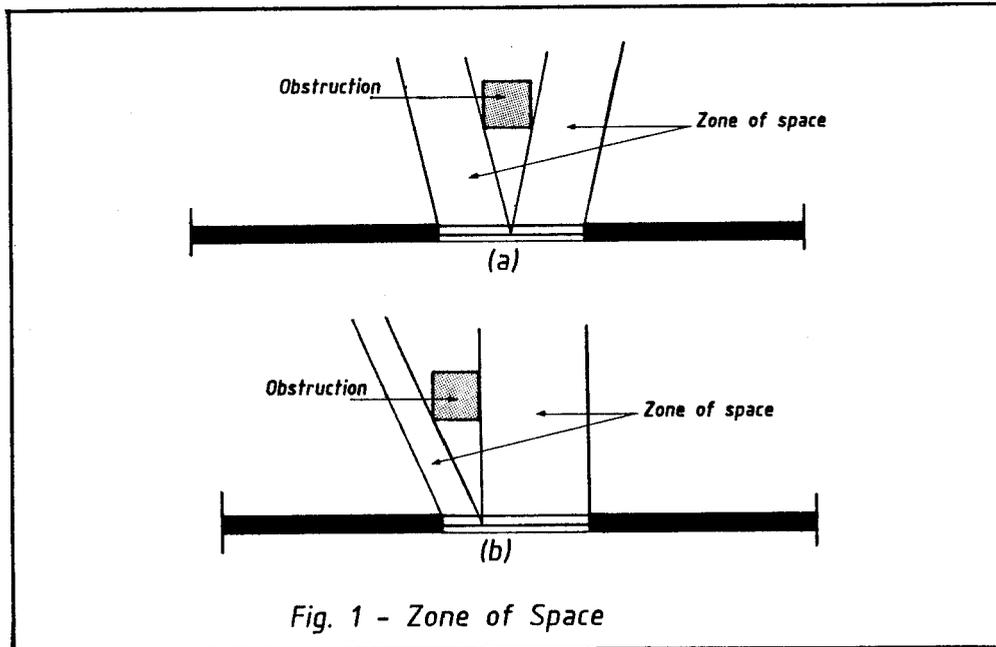
O7 FIRE REQUIREMENTS

In addition to the requirements of this Part, lighting and ventilation shall be provided to comply with Part T of these regulations.

DEEMED-TO-SATISFY RULES

- 001 GENERAL**
The requirements contained in regulations **O1**, **O2**, **O5** and **O6** of the National Building Regulations shall be deemed to be satisfied where lighting and ventilation systems, special provision of natural lighting, artificial ventilation plant and testing of artificial ventilation systems, as the case may be, comply with the deemed-to-satisfy rules contained in the following provisions of this Part.
- 002 NATURAL LIGHTING**
- 002.1** Where for the purposes of natural lighting a room is provided with one or more openings, such opening or openings shall be situated in an external wall, or in a suitable position in the roof of the building.
- 002.2** Where such opening is glazed it shall be glazed with transparent or approved translucent glazing material.
- 002.3** The area of such opening, or total area of such openings, inclusive of frames and glazing bars, shall be not less than 10 % of the floor area of the room or rooms served by it, or 0,2 m², whichever is the greater.
- 003 ZONE OF SPACE FOR NATURAL LIGHTING**
- 003.1** Any opening contemplated in subrule **002.1** shall have a zone of space outside it.
- 003.2** Such opening may be divided into portions, each with its own zone of space.

Commentary: Figure 1(a) and (b) illustrates the zones of space (OO3.2) that may exist when an opening is divided into portions. The lines that determine these zones depend on the size and shape of the obstruction.

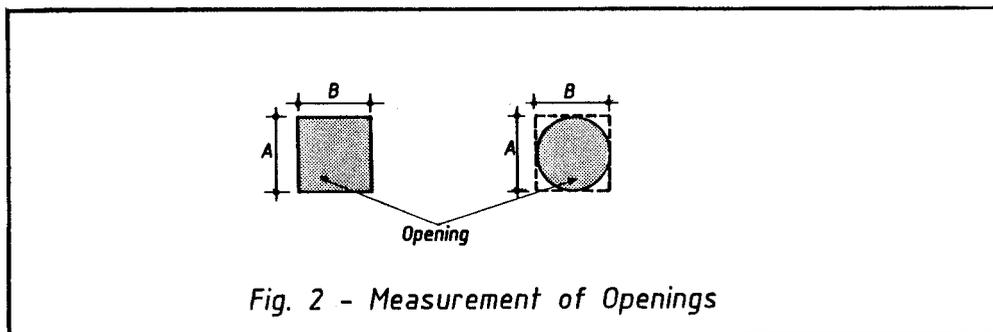


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OO3.3

Any such zone of space shall be limited by parallel planes passing through and extending from the highest and lowest points of such opening and by parallel planes passing through and extending from the points of such opening that are furthest apart in the lateral direction.

Commentary: Figure 2 illustrates the measurement of openings.



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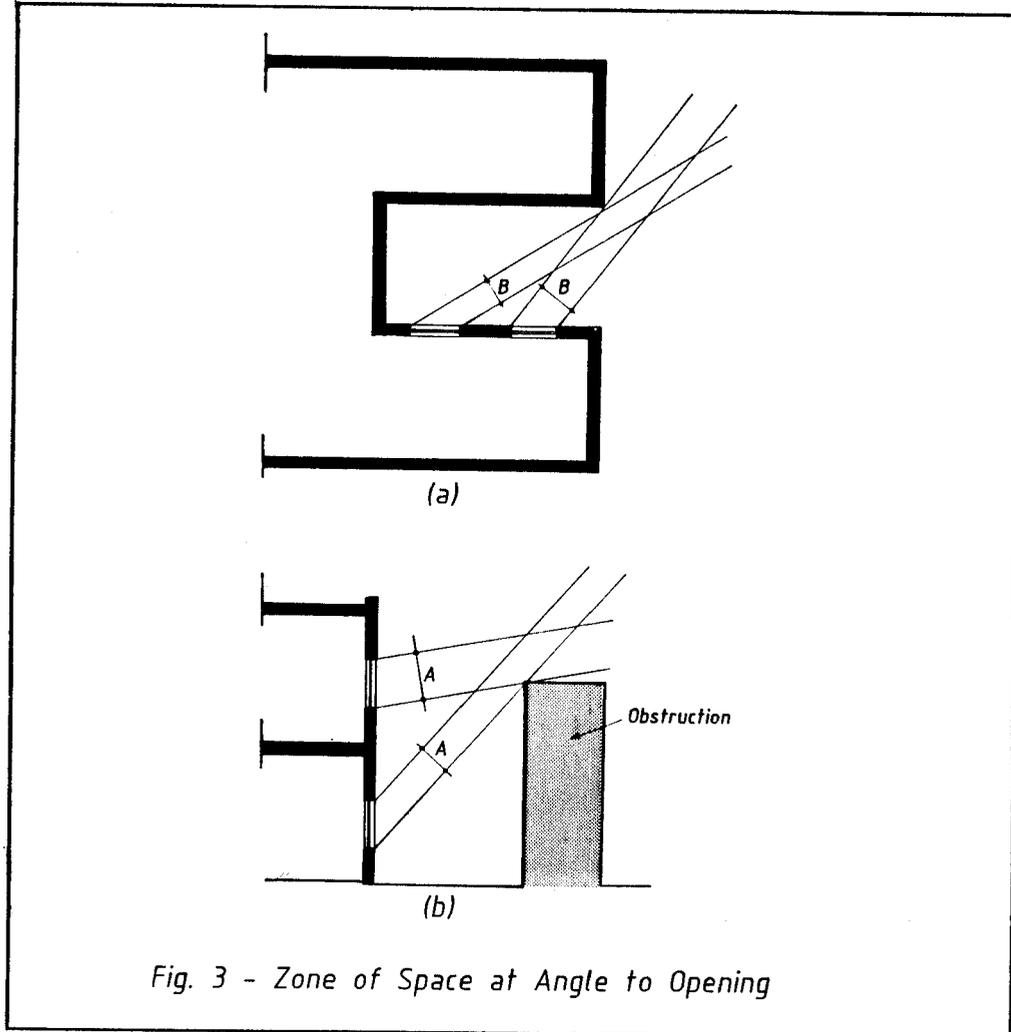
OO3.4

Such parallel planes may extend from the building at any angle to the plane of the opening.

OO3.5

Where the planes bounding such zone of space are not at right angles to the plane of the opening the area of such opening shall for the purpose of subrule **OO2.3** be deemed to be $A \times B$, where A is the shortest distance between the planes bounding the top and bottom of such zone and B is the shortest distance between the vertical planes bounding the sides of such zone.

Commentary: Figure 3 illustrates the case of zones of space which are not at right angles to the plane of the opening.



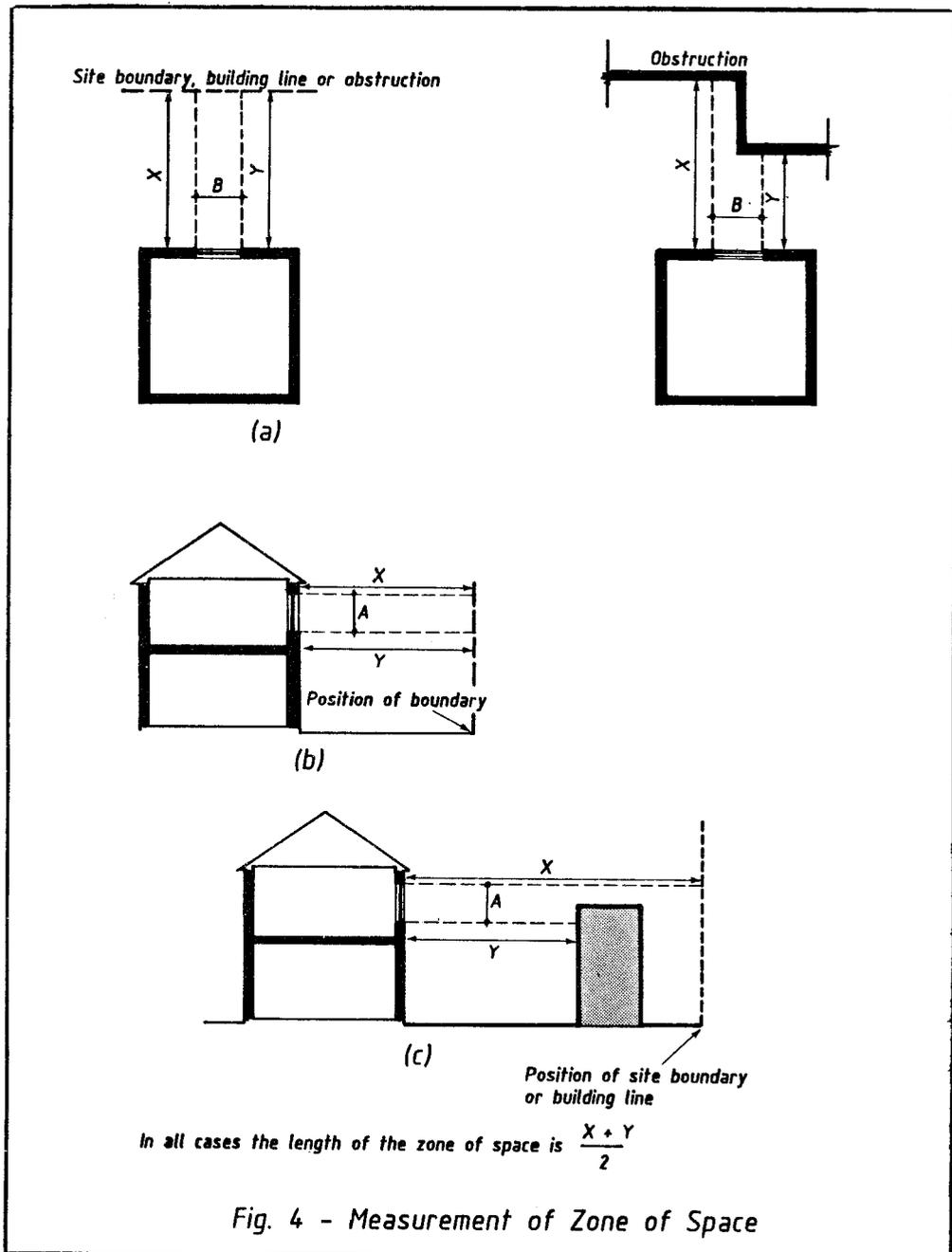
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OO3.6

The available length of any zone of space shall be calculated either as half the sum of the lengths of the vertical planes or as half the sum of the length of the planes passing through the highest and lowest points of the opening, and the length of individual planes shall be measured as the distance along such plane from such opening to —

- (a) any obstruction on the site which intersects such plane; or
- (b) where there is no such obstruction, to any statutory building line on an adjoining site; or
- (c) where there is no such obstruction or line, to the boundary between the site and any adjoining site: Provided that where a zone extends across a street reserve the statutory building line and the boundary contemplated in paragraphs (b) and (c) respectively, shall be taken to mean the statutory building line and street boundary of the site opposite the site concerned.

Commentary: Figure 4 illustrates how to calculate the length of a zone of space.



Drq.11029/E

- 003.7** The available length of any zone of space when calculated in accordance with subrule **003.6** shall be not less than 0,5 m when measured to a boundary line or not less than 1 m when measured to a building line and, notwithstanding the requirements contained in subrules **003.8** and **003.9**, shall not be required to be more than 8 m .
- 003.8** Where none of the planes bounding a zone of space intersects an obstruction on the site, the available length of such zone shall be not less than that contained in Table 1, where H represents the distance measured vertically from the head of the opening to the top of the wall containing the opening.

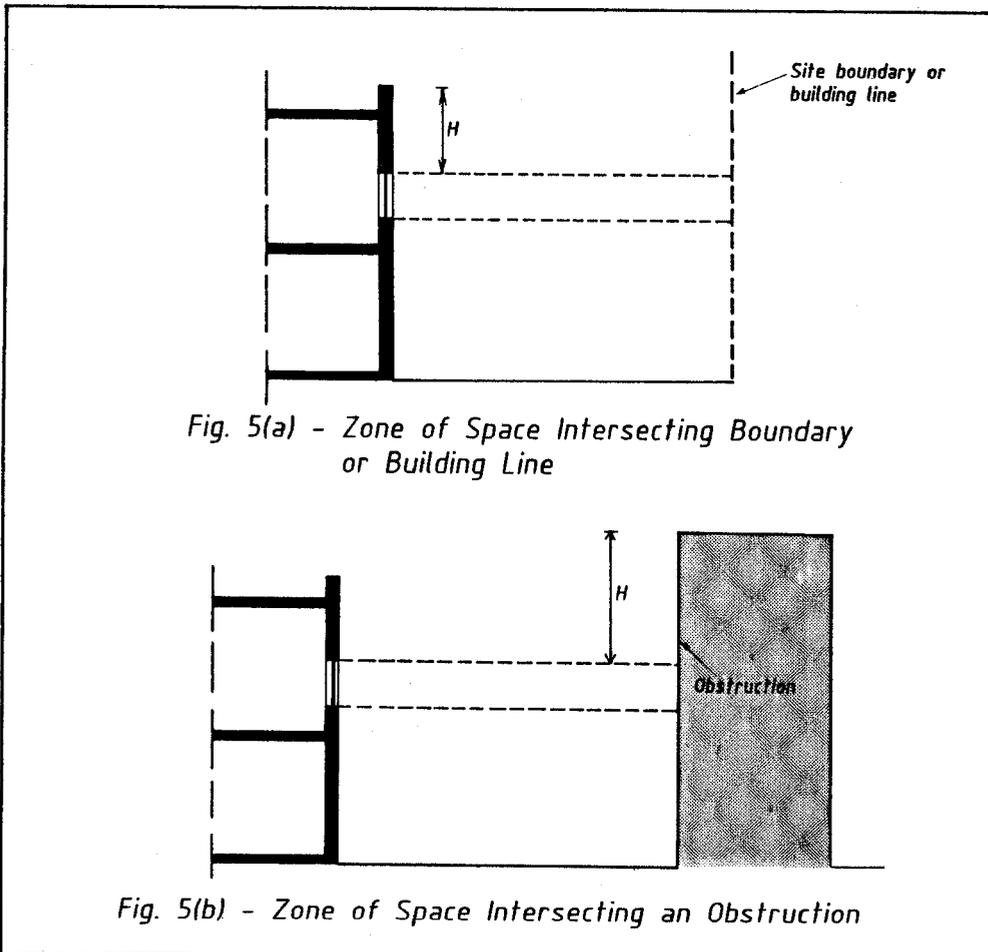
003.9

Where one or more of the planes bounding a zone of space intersects an obstruction on the site the available length of such zone shall be not less than that contained in Table 1, where H represents the height of the obstruction above the level of the head of the opening concerned: Provided that the shortest horizontal distance between the opening and such obstruction shall be not less than 1 m.

TABLE 1 — LENGTH OF ZONE OF SPACE

1	2
Type of room served by opening	Length of zone of space
Habitable room in dwelling house, dwelling unit or a building used for a residential or institutional occupancy	$\frac{1}{3} H$
Any other habitable room	$\frac{1}{5} H$
Bathroom, shower or room containing a WC pan or urinal	$\frac{1}{10} H$

Commentary: Figure 5(a) and (b) shows the height of obstruction which controls the required length of the zone of space.



003.10

Where any projection from the surface of the wall above any opening contemplated in subrule 002.1 is likely significantly to reduce the amount of light reaching such opening —

- (a) at least two-thirds of the plan area of the zone of space outside such opening shall have an unrestricted vertical shaft extending upwards from the plane bounding the top of such zone; and
- (b) no opaque projection over such zone shall extend to a line closer than 1 m from any obstruction or lateral site boundary intersecting such zone.

Commentary: Figure 6 shows the vertical shaft required above any zone of space which has a projection covering part of it.

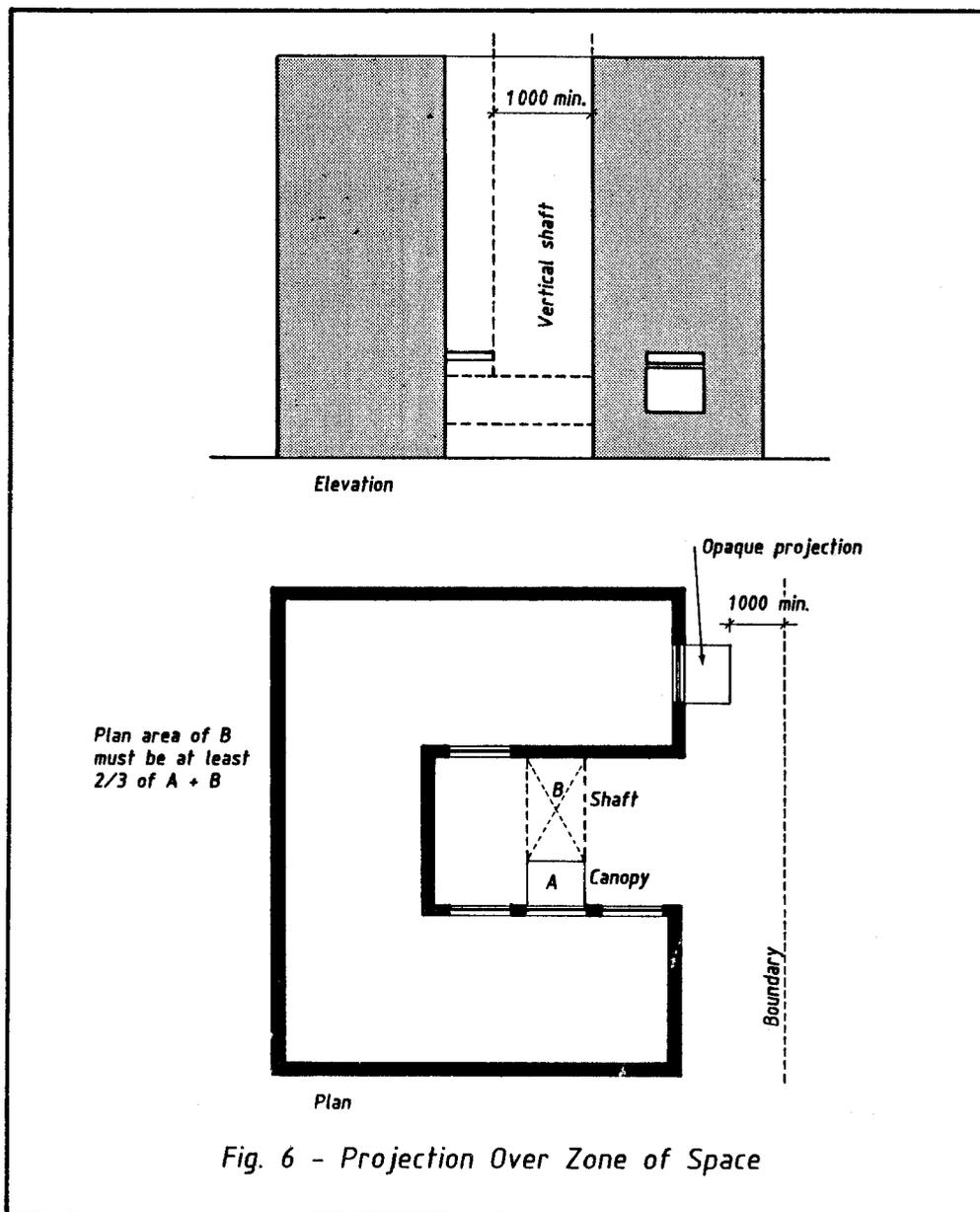


Fig. 6 - Projection Over Zone of Space

OO4 NATURAL VENTILATION

OO4.1 Where for the purposes of natural ventilation any room is provided with an opening or openings —

- (a) the position of such opening or openings in relation to each other and to any internal doors to such room shall be such as to enable such room to be ventilated; and
- (b) the arrangement and sizes of such openings in a garage shall be such that the quantity of noxious fumes or gases in such garage does not exceed a safe limit.

OO4.2 Every such opening shall be either —

- (a) an opening or door in an external wall; or
- (b) an openable glazed window in an external wall or in a suitable position in the roof; or
- (c) an opening in the ceiling or at the top of an internal or external wall, connected directly to a vertical ventilating flue.

OO4.3 The total area of any opening, door or openable glazed window contemplated in subrule **OO4.2(a)** or **(b)** shall be not less than 5 % of the floor area of the room, or 0,2 m², whichever is the greater.

OO4.4 The total area of any opening contemplated in subrule **OO4.2(c)** shall be not less than 2 % of the floor area of the room.

Commentary: *In any building which is not permanently occupied, such as a holiday home, or chalet, windows providing ventilation may remain closed for long periods. In hot humid areas this can lead to problems such as dampness and mould growth and some form of supplementary ventilation may be desirable. Airbricks provide a partial solution but as these may not be sufficient on their own some other form of permanent ventilation such as a roof vent should also be considered.*

OO5 NATURAL LIGHTING AND VENTILATION OF ROOMS OPENING ONTO ENCLOSED BALCONIES, GALLERIES, VERANDAHS AND COURTS

OO5.1 Any room having an opening which opens onto any roofed and enclosed balcony, gallery or verandah, as the case may be, shall be deemed to satisfy the requirements contained in regulation **O1** where such opening satisfies the requirements contained in rule **OO1** and —

- (a) a portion of the outer wall of any such balcony, gallery or verandah has openings complying with subrule **OO2.2** and the area of such openings is at least 10 % of the combined floor area of the room concerned and the balcony, gallery or verandah;
- (b) any such balcony, gallery or verandah is provided with doors or other openable areas having an area of at least 5 % of the combined floor area of the room concerned and the balcony, gallery or verandah; and
- (c) that portion of the outer wall of such balcony, gallery or verandah in which openings contemplated in paragraphs **(a)** and **(b)** are formed is provided with a zone of space complying with the requirements contained in rule **OO3**.

OO5.2 Any room having an opening which opens onto any enclosed and covered or partially covered court shall be deemed to satisfy the requirements contained in regulation **O1** where such opening satisfies the requirements contained in rules **OO2**, **OO3** and **OO4** and —

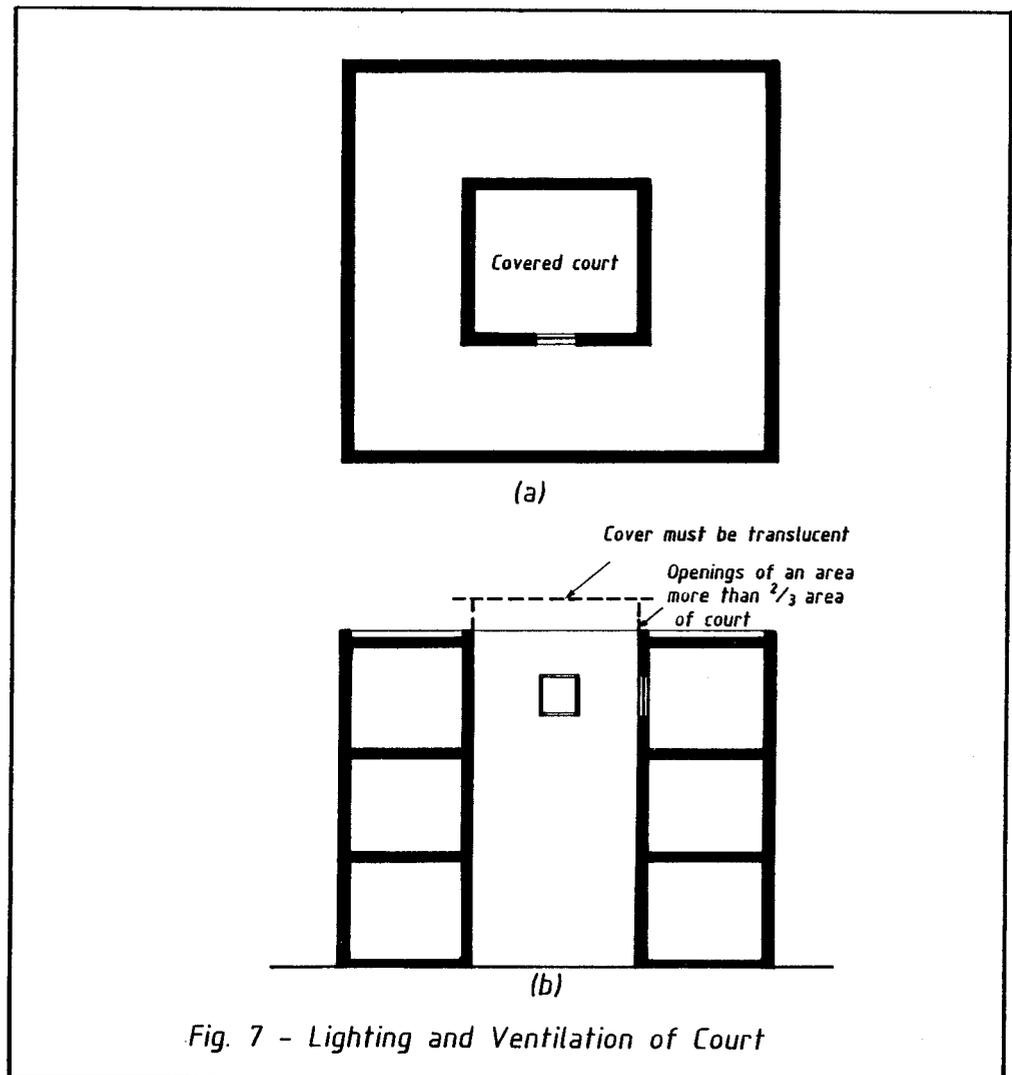
- (a) the cover to such court is adequately translucent; and
- (b) the plan area of such cover is not more than one-third of the plan area of such court; or

- (c) the plan area of such cover is more than one-third of the plan area of such court but additional openings from such court to the outside air have been provided to the extent that the total area of all such openings is equal to at least two-thirds of the plan area of such court:

Provided that where such court is to be occupied for any purpose, whether or not any room has an opening which opens onto such court, such cover shall be translucent and —

- (i) additional openings shall be provided in accordance with paragraph (c); or
- (ii) such court shall be provided with artificial ventilation in accordance with rule O07.

Commentary: Where natural ventilation is required and the cover extends over more than one-third of any enclosed court, additional ventilation openings must be provided either as shown in Figure 7(a) and (b) or through the building.



006 ARTIFICIAL LIGHTING

Where in any building the requirements for lighting contained in regulation **O1** are to be satisfied by the installation of a system of artificial lighting such lighting shall be in accordance with the relevant recommendations contained in SABS O114: Part I.

007 ARTIFICIAL VENTILATION

- 007.1**
- (a) Outside air used in any artificial ventilation system shall be introduced to the system from an inlet positioned to ensure that such air is as far as possible free from local contamination.
 - (b) Where it is not possible to so position such inlet a filter which will reduce contamination of such air to an acceptable level and prevent discharge into rooms of dust or fluff that has accumulated in ducts shall be fitted to such inlet.

007.2 The exhaust outlets for air which has been used for artificial ventilation purposes shall be so located and arranged as to ensure that such air does not cause a nuisance nor contaminate any air which is likely to be drawn into or ventilate any existing building.

007.3 Exhaust outlets or air inlets forming part of any artificial ventilating system shall be protected by a substantial grille or screen through which a 12 mm diameter sphere cannot pass.

007.4 Where an artificial ventilation system has been connected to a room —

- (a) designed to be occupied by persons suffering from infectious or contagious diseases;
- (b) contemplated in regulation **O1(3)(b)**; or
- (c) containing a WC pan or urinal or used as a sauna, darkroom or refuse storage room;

air from such room shall not be recirculated to or permitted to pass into any other room, whether or not such room falls into the same occupancy category, and all such air shall be discharged or exhausted to the outside air.

007.5

- (a) In any room contemplated in regulation **O1(3)(b)** where heat, dust, gas, vapour or volatile matter is liberated in one or more localized areas, each such area shall be provided with an extract facility which shall exhaust air from such area at a rate that will ensure that such heat, dust, gas, vapour or volatile matter is effectively removed through such facility and discharged to the outside air.
- (b) Any such extract facility shall be so constructed that any condensate deposited upon the internal surface of such facility cannot run or drip from such surface back onto such area.

007.6

- (a) The artificial ventilation system serving any parking garage shall be separate from any other artificial ventilation system: Provided that contaminated air exhausted from such garage may be circulated through a transformer, machine or similar service room in order to dissipate heat from machines before passing to the outside air.
- (b) The arrangement and sizes of air inlets and outlets in every garage required in terms of this Part to be artificially ventilated shall be such as to ensure that the level of noxious or toxic fumes or gases at any location in such garage does not rise above a safe limit.

007.7

- (a) Where any kitchen contains an extraction facility for the purpose of extracting heat or vapour such facility shall, where it is to be subjected to an atmosphere containing grease in suspension, be fitted with a means which will filter the air entering such facility to prevent such grease being carried into the system: Provided that where such means cannot be fitted

an easily accessible trap or settling chamber shall be installed in the duct leading from such facility.

- (b) Provision shall be made at every change in direction of such duct for easy inspection and for cleaning of the interior of the duct.
- (c) Any such extraction facility and the artificial ventilation system required therefor shall be constructed or lined throughout with a non-combustible material.
- (d) Any such extraction facility shall not be connected to any other extraction facility or artificial ventilation system.

007.8 Any self-contained artificial ventilation unit installed in the wall of any building where such wall abuts on a public street or place shall be installed and operated in such a way that condensate formed by the operation of the unit is prevented from dripping onto such street or place by means of —

- (a) the use of a unit which disposes of all condensate by evaporation; or
- (b) arranging for the condensate from the unit to be collected and disposed of into a drain or stormwater drain or in such manner as will be acceptable to the local authority.

007.9 The arrangement and sizes of air inlets and outlets in any room which is artificially ventilated shall be such as to ensure an even and uniform distribution and circulation of air throughout the occupied zone of the room without the creation of an air velocity of more than 0,5 m/s .

007.10 (a) Any room or space which is required to be artificially ventilated and is used for an occupancy contemplated in column 1 of Table 2 shall be supplied with outside air at a rate not less than that contemplated in columns 2 and 4 of such table: Provided that —

- (i) where no figure is given in column 2, the rate given in columns 3 and 4 shall be used; or
- (ii) where air has been recirculated through an approved filter capable of removing tobacco smoke particles, or the local authority is satisfied that smoking will not take place in such room or space or in any room or space from which the air has been recirculated, the rate may be reduced to that given in columns 3 and 4 of such table;
- (iii) where airborne toxic substances will be released into the room or space concerned, extract ventilation which is able to remove such substances shall be provided;
- (iv) in the case of a kitchen or any room containing a bath, shower, WC pan or urinal in any dwelling unit or private dwelling house or any such room serving any bedroom, borrowed air may be used in lieu of outside air and the system shall be capable of supplying the required quantity of air under conditions of intermittent use;
- (v) in the case of any motor car repair garage, photographic darkroom, working area in a commercial dry-cleaning establishment, private or central kitchen in a hotel, motel, resort, dormitory and similar facilities or any wash-room or room containing a WC pan or urinal located in an office-type occupancy or intended for use by the public, the extract ventilation quantity shall exceed the supply air quantity to ensure negative pressure in the area concerned;
- (vi) in the case of any laboratory, any fume cupboard provided shall be capable of removing all fumes, gas, vapour or volatile matter likely to be generated in such cupboard; and
- (vii) in the case of a ticket kiosk situated in a parking garage, the air supply to such kiosk shall be sufficient to create positive pressure within the kiosk.

(b) For the purpose of this subrule the number of persons shall be based upon the requirements contained in regulation **A21**.

TABLE 2 — AIR REQUIREMENTS

1	2	3	4
Occupancy	Minimum air requirement, ℓ/s		Remarks
	Smoking	Filtered or non-smoking	
Public halls Assembly halls Churches Theatres (including lobbies and auditoria) Cinemas	7,5 7,5 7,5 7,5	3,5 3,5 3,5 3,5	Air supply required per person
Dry-cleaners and laundries Commercial dry-cleaners (working areas) Storage/collection area Laundries	— 7,5 7,5	120,0 5,0 5,0	Air supply required per person
Educational buildings Classrooms Laboratories Libraries	— — —	7,5 7,5 6,5	Air supply required per person
Food and eating facilities (public) Dining-rooms and restaurants Cafeterias Bars and cocktail lounges Kitchens	7,5 7,5 7,5 17,5	5,0 5,0 5,0 17,5	Air supply required per person
Photographic darkrooms	—	10,0	Air supply required per person
Dwelling units Kitchens Other living areas Bathrooms and shower-rooms Rooms containing WC pan or urinal	50,0 5,0 25,0 25,0	50,0 5,0 25,0 25,0	Air supply required per room
Shops Malls, arcades, warehouses Sales floors, showrooms, dressing rooms	7,5 7,5	7,5 7,5	Air supply required per person
Sports and amusement facilities Ballrooms and discos Bowling alleys (seating area) Playing area (gymnasiums, etc.) Locker-rooms Spectator areas Health spas and slimming salons	7,5 7,5 — 7,5 5,0 —	— — 10,0 7,5 — 7,5	Air supply required per person
Garages Parking garages Ticket kiosks Motor car repairs	7,5 5,0 10,0	7,5 5,0 10,0	Air supply required per m ² of floor area Air supply required per person Air supply required per m ² of floor area
Hotels, motels, resorts, dormitories and similar facilities Lobbies Conference rooms Assembly rooms Bedrooms Living-rooms (suites)	7,5 7,5 7,5 7,5 7,5	5,0 5,0 5,0 — —	Air supply required per person Air supply required per person

TABLE 2 (continued)

1	2	3	4
Occupancy	Minimum air requirement, <i>ℓ/s</i>		Remarks
	Smoking	Filtered or non-smoking	
Central kitchens Private kitchens	17,5 50,0	17,5 50,0	Air supply required per person Air supply required per room
Libraries General Bookstock	— —	6,5 3,5	Air supply required per person
Offices General Meeting and waiting spaces Conference and board rooms Cleaner's rooms	7,5 7,5 10,0	5,0 5,0 5,0	Air supply required per person
	—	1,0	Air supply required per m ² of floor area
Stages, TV, radio and movie film	7,5	5,0	Air supply required per person
Rooms containing baths, showers, WC pans or urinals Serving a dwelling unit or any bedroom All others	25,0	25,0	Air supply required per room
	20,0	20,0	Air supply required per bath, shower, WC pan, urinal stall or 600 mm of urinal space
Transportation Waiting-rooms, ticket and baggage areas, corridor and gate areas, platforms, concourses	7,5	5,0	Air supply required per person
Smoking-rooms	20,0	—	Air supply required per person
Occupancies other than those listed above	As determined by the local authority		

NOTE: The use of a dash in the above table signifies no requirement.

PART P DRAINAGE

REGULATIONS

P1 COMPULSORY DRAINAGE OF BUILDINGS

(1) (a) Where in respect of any building a suitable means of disposal of water-borne sewage is available the owner of such building shall provide a drainage installation.

(b) Where there is no such means of disposal, sewage shall be disposed of in accordance with Part Q of these regulations.

(2) (a) Where a sewer is or becomes available for the drainage of such building the owner of such building shall, at his own cost, lay, alter or extend any drain serving such building to terminate at a location and level as prescribed by the local authority for the connection to such sewer.

(b) In the case of any existing building the local authority shall serve a notice, in writing, upon the owner stating the period within which the connection contemplated in paragraph (a) shall be made.

(3) Where a connecting sewer has been provided to any site the owner of such site shall cause all sewage discharged from any building on such site to be conveyed by a drain to such connecting sewer.

(4) Where the owner of such building fails to lay, alter or extend any drain in terms of subregulation (2) the local authority may lay, alter or extend such drain and recover the costs thereof from the owner: Provided that the local authority shall, before carrying out such work give not less than 14 days notice to such owner of its intention to carry out such work.

(5) Any owner who fails to comply with any requirement of subregulation (1) or (2), shall be guilty of an offence.

P2 DESIGN OF DRAINAGE INSTALLATIONS

(1) Any drainage installation in any building shall be so designed and constructed that —

(a) an adequate number of sanitary fixtures is provided in relation to the population and class of occupancy of such building;

(b) such installation is capable of carrying the design hydraulic load;

(c) such installation is capable of discharging into any common drain, connecting sewer or sewer provided to accept such discharge;

(d) all components and materials used in such installation are watertight;

(e) no nuisance or danger to health will be caused as a result of the operation of any such installation;

(f) any drain in such system is of such strength, having regard to the manner in which it is bedded or supported, that it is capable of sustaining the loads and forces to which it may normally be subjected and that it is, where necessary, protected against any damage;

(g) all sanitary fixtures are so located that they are easily accessible to those persons they are intended to serve;

(h) any necessary inspection, cleaning and maintenance required, may be performed through the means of access provided.

(2) The requirements of subregulation (1) shall be deemed to be satisfied where such installation —

(a) is the subject of an acceptable rational design prepared by or under the supervision of a professional engineer or other approved competent person; or

(b) complies with Part P of section 3 of SABS 0400: Provided that where a local authority is of the opinion that the size or complexity of the drainage installation in any building renders it essential for such installation to be the subject of a rational design, such local authority shall, in writing, notify the owner of such building of its reasons for the necessity for such design and may require such owner to submit for approval plans and particulars of a complete drainage installation based on such design.

P3 CONTROL OF OBJECTIONABLE DISCHARGE

(1) No person shall cause or permit sewage discharged from any sanitary fixture to enter —

(a) any stormwater drain, stormwater sewer or excavated or constructed watercourse;

(b) subject to the Water Act, 1956 (Act No. 54 of 1956), any river, stream or natural watercourse whether ordinarily dry or otherwise; or

(c) any street or other site.

(2) No person shall cause or permit stormwater to enter any drainage installation on any site.

(3) The local authority may by notice in writing order the owner of any site to execute, at his own cost, any precautionary measures required by the local authority to prevent such entry contemplated in subregulation (1) or (2), as the case may be.

(4) No person shall, without the written permission of the local authority, discharge or cause the discharge of any water from a swimming pool, fountain or reservoir, either directly or indirectly, onto any public street or public place, or onto any site other than onto the site upon which such swimming pool, fountain or reservoir is situated.

(5) Any person who contravenes or permits the contravention of any requirement of this regulation or fails to comply with a notice served on him in terms of subregulation (3), shall be guilty of an offence.

P4 INDUSTRIAL EFFLUENT

(1) (a) Where any person has obtained approval to discharge into any drain any liquid or solid matter, other than soil water or waste water, and where any additional drainage and other installations including storage, pre-treatment and metering installations are required by the local authority as a condition of such approval, such person shall submit any plans and other details of such installations required by the local authority.

(b) The installations contemplated in paragraph (a) shall be constructed in accordance with the relevant requirements of these regulations and shall be maintained in good working order.

(2) Any person who constructs an installation contemplated in subregulation (1) other than in accordance with such approval, shall be guilty of an offence.

P5 DISCONNECTIONS

(1) Where any soil fixture is permanently disconnected from any soil pipe, or where any soil pipe is permanently disconnected from any drain, the owner shall seal the opening to such pipe or drain in such a manner that such disconnection will not be a danger to health.

(2) Where any drain is permanently disconnected any remaining part shall be sealed by the owner of such drain.

(3) When any drainage installation is disconnected from a connecting sewer the local authority shall be notified, in writing, by the owner thereof within 30 days from the date of such disconnection.

(4) Any person who contravenes any requirement of this regulation, shall be guilty of an offence.

P6 UNAUTHORIZED DRAINAGE WORK

(1) Unless authorized by the local authority —

(a) no person shall in any manner interfere with any sewer or connecting sewer;

(b) no person shall break into or interfere with any part of a drainage installation other than for the purpose of repair and maintenance.

(2) Any person who carries out or permits the carrying out of any unauthorized work contemplated in this regulation, shall be guilty of an offence.

P7 INSPECTION AND TESTING OF DRAINAGE INSTALLATIONS

(1) Any drain, discharge pipe or ventilating pipe shall be so installed as to be capable of withstanding the test pressures contemplated in rule **PP26** or **PP27**, as the case may be, contained in section 3 of SABS 0400 and such tests shall be carried out in the presence of the building control officer of, or other officer duly authorized by, the local authority.

(2) Any equipment, material or labour required for any inspection or any testing contemplated in Part P of these regulations shall be made available by the person installing such pipe or drain.

(3) No person shall put into use any drainage installation before such installation has been inspected, tested and passed by the local authority as complying with these regulations.

(4) Any person who contravenes the requirement of subregulation (3), shall be guilty of an offence.

DEEMED TO SATISFY RULES

- PP1 GENERAL**
Regulation P2 shall be deemed to be satisfied where any drainage installation complies with deemed-to-satisfy rules contained in the following provisions of this Part.
- PP2 MATERIALS, PIPES, FITTINGS AND JOINTS**
In any drainage installation any type of joint between pipes or between such pipes and fittings shall —
- (a) be appropriate to the materials of which such pipes and fittings are made;
 - (b) remain watertight to the standard set in rule PP26 under normal working conditions or where there may be any differential movement between such pipes and any building or ground or other construction forming part of the drainage installation; and
 - (c) be able to withstand an internal water pressure of 50 kPa and an external water pressure of 30 kPa without leaking.
- PP3 SANITARY FIXTURE STANDARDS**
- PP3.1** Any sanitary fixture shall be made of impermeable, non-corrosive material, shall have a smooth and readily cleanable surface and shall be so constructed and fitted as to discharge through a trap, into a soil pipe or waste pipe, as the case may be.
- PP3.2** The water supply outlet to any waste fixture shall be situated not less than 20 mm above the flood-level rim of such fixture: Provided that this requirement shall not apply to any bidet.
- PP4 STANDARDS FOR WC PANS**
- PP4.1** Any WC pan shall be so designed and manufactured as to comply with the relevant requirements contained in SABS 497: Provided that any WC pan which has a horizontal outlet spigot where the connection between such spigot and the soil pipe connected to it is made by an adaptor which can provide a slope downwards at a gradient of not less than 1 in 40 towards the inlet of such soil pipe may be installed in any building.
- PP4.2** Any WC pan of the pedestal type shall be manufactured as a single unit and where such pan is installed in a position so that the joint between its outlet spigot and the soil pipe into which it discharges, is concealed, such pan shall be installed in such a manner that there is ready access to such joint.
- PP4.3** Any WC pan of the wall-mounted type shall be manufactured as a single unit and shall be so constructed that such pan can —
- (a) be firmly attached to a wall; or
 - (b) be rigidly supported by a bracket.
- PP4.4** Any WC pan of the squat type may be manufactured in two parts where the joint between the upper and lower parts is situated above the normal level of the water seal in the trap of such pan.
- PP4.5** Any WC pan shall be served by its own separate flushing device.
- PP4.6** Any seat associated with any WC pan shall have a smooth non-absorbent surface and be held in place by fasteners made of corrosion resistant material.

PP5 STANDARDS FOR URINALS

- PP5.1** (a) Any urinal shall be of either one or more slabs, or a stall, trough, bowl or other suitable receptacle which shall have a smooth and readily cleanable non-absorbent surface.
(b) Where a slab or trough type urinal is provided a 600 mm length of such slab or trough shall be deemed to be equivalent to one urinal stall or bowl.
- PP5.2** Any urinal or group of urinals shall for the purposes of subrule **PP5.3** be provided with a flushing device: Provided that this requirement shall not apply with regard to any urinal that is specifically designed and constructed as a flushless urinal.
- PP5.3** Any urinal shall be so designed and installed that all of its surface, within its perimeter, from a distance of not more than 100 mm below the outlet of its flushing device, is cleaned by the water discharged from the device.
- PP5.4** When any urinal is made of stainless steel it shall be made as a single unit and shall be so constructed that —
(a) any weld shall have a degree of corrosion resistance not less than that of the parent metal;
(b) any crevice on the exposed side of joints shall be filled with weld metal;
(c) any removable corner shall be attached by means of a corrosion resistant fastener.
- PP5.5** The channel fitted to any slab or stall type urinal shall be graded with a fall of not less than 1 in 100 and the outlet to this channel shall —
(a) serve not more than 4,8 m of slab urinal, or 8 stall units; and
(b) be provided with a trap, which shall be provided with a corrosion resistant grating designed to retain solid matter without obstructing the flow of liquids: Provided that any such grating shall not be installed in the case of any trap which serves any siphonic urinal.
- PP5.6** Any joint between any parts of a urinal shall be urine resistant and watertight.
- PP5.7** (a) Any urinal of the wall-mounted type shall be so constructed that it shall discharge by gravity and have the following minimum dimensions:
(i) a vertical distance of 300 mm from the outlet of the bowl to the lowest point of discharge of flushing water into the urinal;
(ii) an external width of 300 mm at the widest point;
(iii) a horizontal distance of 230 mm from the front of the lip to the wetted face immediately opposite the centre point of such lip; and
(b) such urinal shall be manufactured as a single unit and where it is a urinal flushed by wash-down action it shall be provided with a separate trap or where it is flushed by siphonic or jet action it shall have an integral trap.
- PP5.8** Any urinal having dimensions less than those contained in subrule **PP5.7(a)** may be permitted if a trapped floor drain is installed in the same room.
- PP5.9** Any flushless urinal shall —
(a) be constructed of inert material with a smooth finish and a high resistance to water absorption;
(b) be so constructed that the inner surface of any bowl and outlet is smoothly curved to ensure that any flow of urine into any trap is unimpeded and cannot pond in any such urinal;
(c) have waste fittings and discharge piping made of plastics material or other inert material resistant to corrosion.

- PP6** **FLEXIBLE CONNECTORS FOR WC PANS**
- PP6.1** Any flexible connector which is used to connect the outlet spigot of a WC pan to any soil pipe shall not permit any leakage of soil water at the joint.
- PP6.2** Such connector shall have a maximum water absorption of 2 % and shall be flexible to accommodate any dimensional variations between, and any surface irregularities of, such spigot and pipe.
- PP6.3** The requirements contained in subrules **PP6.1** and **PP6.2** shall be deemed to be satisfied if such connector complies with the requirements contained in SABS 974.
- PP7** **ELECTRICAL SANITARY FIXTURES**
- PP7.1** Any clothes-washing machine or dish-washing machine which is permanently connected to any drainage installation shall discharge through a trap into a waste pipe.
- PP7.2** No person shall incorporate into any drainage installation a mechanical food-waste or other disposal unit or garbage grinder which has a power capacity in excess of 500 W unless —
- (a) the owner of the building has registered such unit or grinder with the local authority or it is shown on an approved plan and such local authority is satisfied that the working of any sewerage or sewage treatment system shall not thereby be impaired; and
 - (b) such unit or garbage grinder has been installed in compliance with the relevant requirements contained in the compulsory specification for the safety of electrical appliances published in Government Notice 466 of 13 March 1981 and is of a type which will not cause such impairment.
- PP7.3** Any food-waste disposal unit shall discharge through a trap having a depth of water seal of not less than the relevant depth given in the rules contained in this Part.
- PP7.4** Where any food-waste disposal unit is—
- (a) installed in contravention of the provisions of these rules; or
 - (b) is not functioning efficiently or is impairing the work of any part of the sewerage system, the local authority may serve a notice on the owner of such unit, or the owner or the occupier of the building in which such unit is installed, requiring him to remove or alter such unit, or to alter the manner of its installation, by a date and on such conditions as it may determine.
- PP7.5** The owner shall notify the local authority within 14 days of the removal of any registered unit or grinder.
- PP8** **MACERATOR TYPE SANITARY-TOWEL DISPOSERS**
- (a) In any room containing sanitary fixtures designated for the use of females, suitable means shall be provided for the disposal of sanitary towels.
 - (b) Any macerator type sanitary-towel disposer shall discharge through a trap into a soil pipe.
- PP9** **SEWAGE LIFTS**
- PP9.1** Where any building is at such a level in relation to the nearest connecting sewer that any drainage installation serving such building cannot discharge into such connecting sewer by gravitation the owner of such building shall, at his own cost, install an approved appliance and where required by the local authority,

standby facilities, for the purpose of raising sewage to a level which will enable it to gravitate to such connecting sewer.

PP9.2 Such appliance shall be operated and maintained at the cost of such owner and shall be so designed and located as not to be offensive or to be injurious or dangerous to health.

PP10 CONSERVANCY TANKS, SEPTIC TANKS AND FRENCH DRAINS

PP10.1 Any conservancy tank shall, subject to the clearing services provided by the local authority in question —

- (a) have a capacity as prescribed by such local authority;
- (b) be constructed with means of access for cleaning;
- (c) be provided with a means for clearing as prescribed by such local authority.

PP10.2 Any conservancy tank or septic tank to be used on a site for the reception of sewage shall —

- (a) be so designed and constructed that it will be impervious to liquid;
- (b) be so sited —
 - (i) that there will be a ready means of access for the clearing of such tank;
 - (ii) as not to endanger the structure of any building or any services on the site; and
- (c) be so designed and sited that it is not likely to become a source of nuisance or a danger to health.

PP10.3 Any septic tank shall, subject to the requirements contained in subrule **PP10.7**, discharge to a french drain.

PP10.4 Any septic tank shall —

- (a) where it is to serve a dwelling house or dwelling unit be of a designed capacity of not less than 1,7 m³ and be capable of receiving one day's sewage flow as given in Table 1.
- (b) where it is to serve any building not being a dwelling house or dwelling unit, be of a designed capacity not less than 3 times the daily flow from such building, using the per capita sewage flow given in Table 2 or such other flow as may be determined by the local authority where not so given.
- (c) be so constructed that —
 - (i) it is provided with a means of access for the purpose of emptying and cleaning; and
 - (ii) the depth in such tank below the outlet invert is not less than 1,0 m and there is an airspace of not less than 200 mm between the surface of the liquid contained therein and the underside of the top cover of such tank.

TABLE 1 — SEWAGE FLOWS FROM DWELLING HOUSES OR DWELLING UNITS

1	2
Number of bedrooms	Sewage flow, litres per day
2	700
3	900
4	1 100
5	1 400

TABLE 2 — SEWAGE FLOW FROM BUILDINGS NOT BEING DWELLING HOUSES OR DWELLING UNITS

1	2
Type of establishment	Sewage flow, litres per person per day
Boarding houses (Additional kitchen wastes for non-resident boarders)	110 23
Hotels without private baths	110
Hotels with private baths	140
Restaurants (toilet & kitchen wastes per patron)	20
Tourist camps or caravan parks with central bathhouse	90
Day schools	37
Day workers at offices per shift	90
Hospitals	500
Factories (litres per person per shift, exclusive of industrial wastes)	140
Swimming baths	9
Motels (per bed)	90
Drive-in theatres (per car space)	9

PP10.5 No industrial effluent shall be allowed to flow into any septic tank.

PP10.6 Any french drain which is to receive effluent or any evapotranspirative bed shall —

- (a) be so constructed and located as not to cause the pollution of any spring, stream, well or other source of water which is used or is likely to be used for drinking, domestic or kitchen purposes;
- (b) have a capacity, be so constructed and contain suitable material so as to adequately receive and dispose of any effluent flowing into it; and
- (c) be not less than 3 m from any building or boundary of the site on which it is situated.

PP10.7 (a) The ground in which it is proposed to construct a french drain shall be tested for percolation in accordance with the method contained in rule **PP28**.

- (b) Where, after testing in accordance with rule **PP28**, the site has been found suitable for the use of a french drain, such french drain shall be constructed to such dimensions that the rate of application of effluent to the infiltration area, within such french drain, does not exceed the values given in column 2 of Table 3 as appropriate to the percolation rate given in column 1 of such table.

TABLE 3 — RATES OF PERCOLATION AND EFFLUENT APPLICATION

1	2
Percolation rate: Average time for 25 mm fall of test water level, minutes	Rate of application of effluent to subsoil infiltration areas, litres per m ² of french drain wall area per day
0-3	108 max.
3-5	108-100
6-10	99-80
11-15	79-65
16-20	64-53
21-26	52-40
27-30	39-33
Over 30	Not permitted

NOTE: Intermediate values to be obtained by interpolation.

- (c) No french drain shall be constructed in any ground where —
 - (i) such ground has a percolation rate exceeding 30 minutes;
 - (ii) any effluent may flow out due to the contours of or the strata forming such ground;
 - (iii) the site to be affected by such effluent is of insufficient size to accommodate the soaking away of the effluent;
 - (iv) the level of the water table is or may be such as to prevent adequate percolation; or
 - (v) any site may be affected by the presence of such french drain.

PP10.8 An evapotranspirative bed may, subject to the provisions of section 10 of the Building Regulations and Building Standards Act, 1977 (Act 103 of 1977), be installed instead of a french drain.

PP11 DISCHARGES FROM WASHING AREAS

- PP11.1**
- (a) Any building used as a stable, garage, cowshed, dairy, kennel, butchery, abattoir or any vehicle washing area or other similar area that requires regular cleansing which produces waste water or soil water shall be connected to a drain which shall serve such building or area;
 - (b) such area shall be paved with an approved impervious material, and be graded to a gully which shall be fitted with a removable grating and be connected to an approved silt trap, grease trap, petrol and oil interceptor or two or more of the foregoing.

- PP11.2** Such area shall —
- (a) be roofed over; and
 - (b) be surrounded by a kerb not less than 100 mm high or it shall be elevated above the immediately surrounding ground level by not less than 100 mm .

PP12 DISCHARGES FROM SWIMMING BATHS, SWIMMING POOLS, FOUNTAINS OR RESERVOIRS

PP12.1 Where any swimming bath, swimming pool, fountain or reservoir is required by the owner thereof to have an overflow to lead away excess rainwater, such overflow shall be designed and constructed to discharge —

- (a) onto the site upon which such bath, pool, fountain or reservoir is situated; or
- (b) into an approved surface channel, stormwater drain or natural watercourse.

PP12.2 Any swimming bath, swimming pool, fountain or reservoir shall be so designed and constructed that the water from the backwashing of any filter is discharged onto the site upon which such bath, pool, fountain or reservoir is situated or, with approval, into a drain.

PP13 PROVISION OF SANITARY FIXTURES

PP13.1 The number of sanitary fixtures to be provided in any building shall be based on the population for which such building is designed, and such population shall be calculated in terms of regulation A21:

Provided that —

- (a) where in any particular occupancy, separate sanitary facilities are provided for each sex the number of sanitary fixtures installed for them shall be based on the population of that particular sex for which such facilities are intended, and if the number of persons of each sex cannot be determined it shall be assumed that they are in equal proportions;
- (b) where fixtures are to be situated in separate groups the number of fixtures in any group shall be based on the calculation of that portion of the total population for which the group is intended;

- (c) any building for which the population cannot be determined shall, where such building contains one or more habitable rooms, be provided with at least 1 WC pan and 1 washbasin.

PP13.2

Subject to the requirements contained in subrule **PP13.1**, the minimum number of sanitary fittings to be provided in any building shall be as given in Tables 4-8, and such fixtures shall —

- (a) be situated in places which are convenient of access; and
(b) where necessary shall be designated for the use of males or females or both: Provided that any room containing fixtures designated for the use of both sexes shall be capable of being locked from inside.

Commentary: *The population calculated in terms of regulation **A21** is the total population for a building of a particular class of occupancy and includes personnel, public and visitors.*

*Table 4 refers to Table 6 in most occupancy classifications for the minimum provision to be made for personnel as distinct from that for the public and visitors. In using Table 6 the population referred to in column 1 of the table is then the number of personnel only of a particular sex in an occupancy. The total number of personnel will in some cases sensibly be the total population obtained from regulation **A21**, the public and visitors being very few in number. In other cases the proportion of personnel to public and visitors will have to be established. The total number of personnel in a shopping complex, or in any particular shop, may be taken as 10% of the total population for such complex or shop calculated in terms of regulation **A21**.*

If the facilities provided in a shopping complex can be suitably situated such that they are available to personnel and the public and visitors it may not be necessary to provide separate facilities for the personnel in individual shops. The minimum number of facilities provided should then be the total required in accordance with Table 6 for the total number of personnel in the shops within the complex who make use of these facilities.

In column 2 of Table 4 the minimum provision for public and visitors is given. In some circumstances this minimum may be considered less than adequate. The view has been taken that rather than be prescriptive it should be left to the owner to decide what provision he wishes to make above the minimum to satisfy the public and to safeguard his business interests. It is suggested that part (b) of Table 7 may be used where guidance on any provision above the minimum is required.

TABLE 4 — PROVISION OF SANITARY FIXTURES

1	2	3
Type of occupancy and population	Fixture	Exceptions
A1: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	a) In any building where facilities in accordance with Table 6 are available to both personnel and the public or visitors, no separate facilities shall be required for the public or visitors. b) No separate facilities for the public or visitors shall be required within any shop having a floor area of less than 50 m ² . c) In any group of shops under one ownership or in any shopping complex on a single site — i) facilities for personnel may be situated at convenient locations and not necessarily in any particular shop or shops; ii) facilities for the public and visitors may be situated at convenient locations and not necessarily in any particular shop or shops; iii) facilities for personnel may be grouped or combined with those provided for the use of the public or visitors. d) In any occupancy where personnel are exposed to high risk substance, dirt, filth, dust, soot, oil, grease or any similar substance, exposure to which is such that showers are necessary, at least 1 shower per 15 persons shall be provided separately for each sex and such showers shall be located in, or have direct access to, a change room.
A2: Personnel Public and visitors Peak demand No peak demand Participants in sports	Table 6 Table 7 (part a) Table 7 (part b) Table 8	
A3	Table 6	
A4: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
A5: Public and visitors Peak demand No peak demand Participants in sport	Table 7 (part a) Table 7 (part b) Table 8	
B1, B2 and B3 Personnel Public and visitors	Table 6 1 WC pan 1 washbasin	
C1 and C2 Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
D1, D2 and D3 Personnel Public and visitors D4	Table 6 No separate provision required No provision required	
F1: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	
F2 and F3 Personnel Public and visitors	Table 6 1 WC pan 1 washbasin	
G1: Personnel Public and visitors	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin	

TABLE 4 (continued)

1	2	3
Type of occupancy and population	Fixture	Exceptions
H1: Personnel Public and visitors Residents	Table 6 Males: 1 WC pan 1 washbasin Females: 1 WC pan 1 washbasin Table 5	Any single hotel room or suite or any servant's room with its own facilities need not be provided with separate facilities for males and females. Showers may be substituted for baths in the following maximum ratios: Males — two-thirds of total Females — one-third of total
H2	Table 5	
H3 and H4: Within each dwelling unit	1 WC pan 1 washbasin 1 bath or shower	
J1, J2, J3 and J4	Table 6	
Educational Institutions Classrooms and lecture rooms (A3 occupancy) Personnel Students or pupils Dormitories or other residential accommodation (H2 occupancy) Personnel Students or pupils	Table 6 Table 7 Table 5 Table 5	In primary schools the indicated number of sanitary facilities shall in each case be increased by one. Separate facilities for personnel and students or pupils shall not be required where all facilities are available to both groups. Separate facilities for residential accommodation and classrooms or lecture rooms shall not be required where facilities in one are easily available to the other.
E1, E2 and E3	Number to be provided depends on type and design of Institution. Table 5 may be used as a guide.	

Commentary: In using Tables 5 to 8 the population referred to in column 1 of the tables is the population of the particular sex for which the minimum provision is to be determined. Unless the population of each sex is otherwise known this will be one half of any total number of persons or total population, in accordance with subrule **PP13.1(a)**.

TABLE 5

1	2	3	4	5	6	7	8
For a population of up to —	Number of sanitary fixtures to be installed relative to the population given in Column 1						
	Males				Females		
	WC pans	Urinals	Washbasins	Baths	WC pans	Washbasins	Baths
8	1	1	1	1	2	1	1
20	1	2	2	2	3	2	2
40	2	3	3	3	4	3	3
60	3	4	4	4	6	4	4
80	4	6	5	5	9	5	5
100	4	8	6	6	12	6	6
120	5	9	6	6	14	7	7
140	5	10	7	7	15	8	8
180	5	11	8	8	16	8	8
	For a population in excess of 180 add 1 WC pan for every 50 persons	For a population in excess of 180 add 1 urinal for every 40 persons	For a population in excess of 180 add 1 washbasin and 1 bath for every 50 persons		For a population in excess of 180 add 1 WC pan, 1 washbasin and 1 bath for every 60 persons		

TABLE 6

1	2	3	4	5	6
For a population of up to —	Number of sanitary fixtures to be installed relative to the population given in Column 1				
	Males			Females	
	WC pans	Urinals	Washbasins	WC pans	Washbasins
15	1	1	1	2	1
30	1	2	2	3	2
60	2	3	3	5	3
90	3	5	4	7	4
120	3	6	5	9	5
	For a population in excess of 120 add 1 WC pan, 1 urinal and 1 washbasin for every 100 persons			For a population in excess of 120 add 1 WC pan for every 50 persons	For a population in excess of 120 add a washbasin for every 100 persons

TABLE 7

1	2	3	4	5	6
For a population of up to —	Number of sanitary fixtures to be installed relative to the population given in Column 1				
	Males			Females	
	WC pans	Urinals	Washbasins	WC pans	Washbasins
a) Facilities subject to peak demand					
50	1	1	1	2	1
100	1	2	1	3	2
150	1	3	1	5	3
250	2	4	2	7	4
500	3	7	3	12	6
1 000	3	12	4	16	7
1 500	4	15	5	20	8
	For a population in excess of 1 500 add 1 WC pan for every 500 persons	For a population in excess of 1 500 add 1 urinal for every 300 persons	For a population in excess of 1 500 add 1 washbasin for every 500 persons	For a population in excess of 1 500 add 1 WC pan for every 150 persons	For a population in excess of 1 500 add 1 washbasin for every 500 persons
b) Facilities not subject to peak demand					
50	1	—	1	1	1
100	1	1	1	2	1
150	1	2	1	3	2
250	2	3	2	5	3
500	2	4	3	6	4
1 000	2	6	5	8	6
1 500	3	7	6	10	7
	For a population in excess of 1 500 add 1 WC pan for every 1 000 persons	For a population in excess of 1 500 add 1 urinal for every 500 persons	For a population in excess of 1 500 add 1 washbasin for every 700 persons	For a population in excess of 1 500 add 1 WC pan for every 300 persons	For a population in excess of 1 500 add 1 washbasin for every 700 persons

TABLE 8

1	2	3	4	5	6	7	8
For a population of up to —	Number of sanitary fixtures to be installed relative to the population given in Column 1						
	Males				Females		
	WC pans	Urinals	Washbasins	Showers	WC pans	Washbasins	Showers
10	1	1	1	2	2	1	2
20	1	2	2	2	3	2	2
30	2	2	3	3	5	3	3
40	3	3	3	3	6	3	4
60	3	4	4	5	7	4	5
80	4	5	5	5	9	5	5
100	4	6	5	6	10	5	6
	For a population in excess of 100 add 1 WC pan and 1 urinal for every 100 persons		For a population in excess of 100 add 1 washbasin for every 100 persons	For a population in excess of 100 add 1 shower for every 40 persons	For a population in excess of 100 add 1 WC pan and 1 washbasin for every 80 persons		For a population in excess of 100 add 1 shower for every 40 persons

PP14 HYDRAULIC LOADING OF DRAINAGE INSTALLATIONS

PP14.1 The hydraulic load discharged into or carried by any discharge pipe or any drain shall be calculated in units, referred to as "fixture units".

PP14.2 The hydraulic load at any point in any discharge pipe or any drain shall be the sum of the fixture unit ratings of all sanitary fixtures, the discharges from which enter the discharge pipe or drain upstream of such point.

PP14.3 The hydraulic load discharged from any sanitary fixture specified in column 1 of Table 9 shall be as given in column 3, and in the case of any sanitary fixture not listed in column 1 the diameter of the trap outlet of such a fixture, when identified in column 2, shall indicate the hydraulic load, given in column 3, which is to be prescribed for such a fixture.

TABLE 9 — FIXTURE UNIT RATINGS OF SANITARY FIXTURES

1	2	3
Examples of sanitary fixtures	Nominal diameter of trap, mm	Hydraulic load, fixture units
Washbasin, bidet, wall-mounted urinal (separate trap)	32	1
Bath, sink, shower, wash trough	40	2
Wall-mounted urinal with integral trap, commercial electrical sanitary fixtures	50	3
	75 or 80	5
WC pan	100	8
Sanitary group		12

Commentary: *The fixture unit rating given in Table 9 for each type of fixture is a measure of the hydraulic load and takes into account the duration of discharge, the interval between discharges and the mean discharge rate of the particular fixture.*

The hydraulic load for a sanitary group given in Table 9 is not the same as the sum of the hydraulic loads for the individual fixtures comprising such group because the assumption made regarding the interval between discharges is different in each case.

PP15 DRAINAGE SYSTEMS

PP15.1 The following requirements shall apply with regard to the single stack system:

- (a) It shall only be installed where the building in question is of the office class which has sanitary fixtures installed in ranges or of the residential class which has sanitary fixtures installed in groups.
- (b) It shall not be installed in any residential building exceeding 30 storeys in height or in any office building exceeding 24 storeys in height above the lowest ground level abutting such building.
- (c) No trap vents for the protection of any water seals shall be required in terms of this rule or in terms of subrule **PP15.2** or **PP15.3**.

- (d) Any supplementary vent stack contemplated in subrules **PP15.2** and **PP15.3** shall be cross-connected at each storey with the discharge stack above the level of the highest branch discharge pipe connection to the discharge stack.
- (e) The discharge stack shall be continued upwards to form a stack vent.
- (f) The radius of the centre line of any bend at the foot of the discharge stack shall be not less than 300 mm .
- (g) No offset shall be made in any discharge stack unless a ventilating pipe is provided to reduce any pressure which may be caused by any offset, and the nominal diameter of such ventilating pipe shall be not less than half the diameter of such discharge stack.
- (h) Every waste fixture trap shall be either a 'P' trap which has a water seal of not less than 75 mm in depth or shall be a resealing trap of the 'P' type.
- (j) The vertical distance between the invert of the lowest branch discharge pipe connected to any discharge stack and the invert of the bend at the foot of the stack shall be not less than —
 - (i) 450 mm for stub stacks, stacks in single dwellings of up to three storeys in height and stacks of up to two storeys in height serving a maximum of two groups of sanitary fixtures;
 - (ii) 750 mm for stacks of up to five storeys in height in other buildings; and
 - (iii) one storey in height for stacks higher than five storeys.
- (k) Where any waste branch and any opposed soil branch from a WC pan are connected to any discharge stack the centre line of such waste branch shall not intersect the centre line of such stack within 200 mm below the intersection of the centre line of such soil branch with the centre line of such stack.
- (l) The inlet of a branch discharge pipe or a fixture discharge pipe joining a discharge stack of equal diameter shall be swept in the direction of flow with a radius of not less than 50 mm or shall be at an angle of 45° .

PP15.2

The following additional requirements shall apply with regard to any single stack installation in any building where the occupancy is of the residential class:

- (a) The fixture branch of any sanitary fixture in any sanitary group shall be separately connected to the discharge stack.
- (b) Where the trap fitted to any washbasin has a nominal diameter of 32 mm the internal diameter of the fixture branch serving such washbasin shall be not less than 40 mm .
- (c) Not more than two sanitary groups installed in any one storey shall be connected to the same discharge stack.
- (d) A discharge stack of not more than two storeys in height serving a maximum of two groups of sanitary fixtures may discharge into a stub stack.
- (e) The minimum discharge stack size and, where required, supplementary vent stack size and cross-ventilation requirements shall be as prescribed in Table 10.

TABLE 10 — MINIMUM DISCHARGE STACK AND SUPPLEMENTARY VENT STACK SIZES AND REQUIREMENTS FOR SINGLE STACK SYSTEMS: RESIDENTIAL OCCUPANCY

1	2	3
Number of storeys served by discharge stack	Nominal diameter of discharge stack, mm	Minimum nominal diameter of supplementary vent stack for discharge stack serving one or two sanitary groups in each storey, with cross vent at each floor, mm
Up to 10	100	None
11 to 15	100	50
	150	None
16 to 30	150	None

PP15.3

The following additional requirements shall apply with regard to any single stack installation in any building where the occupancy is of the office class:

- (a) Where sanitary fixtures are installed in ranges as contemplated in column 2 of Table 11, the minimum nominal diameter of any discharge stack and of any supplementary vent stack, where required, shall be as given in columns 3 and 4 respectively for the number of storeys served by such discharge stack as given in column 1.
- (b) Any soil or waste branch discharge pipe to which such sanitary fixture referred to in paragraph (a) is connected, shall be separately connected to the discharge stack.
- (c) For the purposes of Table 11 any number of urinals not exceeding 4 may be regarded as equal to one WC pan.
- (d) Where a closed system is used and any branch discharge pipe is connected to a stub stack, such closed system shall not receive the discharge from more than four sanitary fixtures in a range.

Commentary: Figure 1 illustrates a single stack installation.

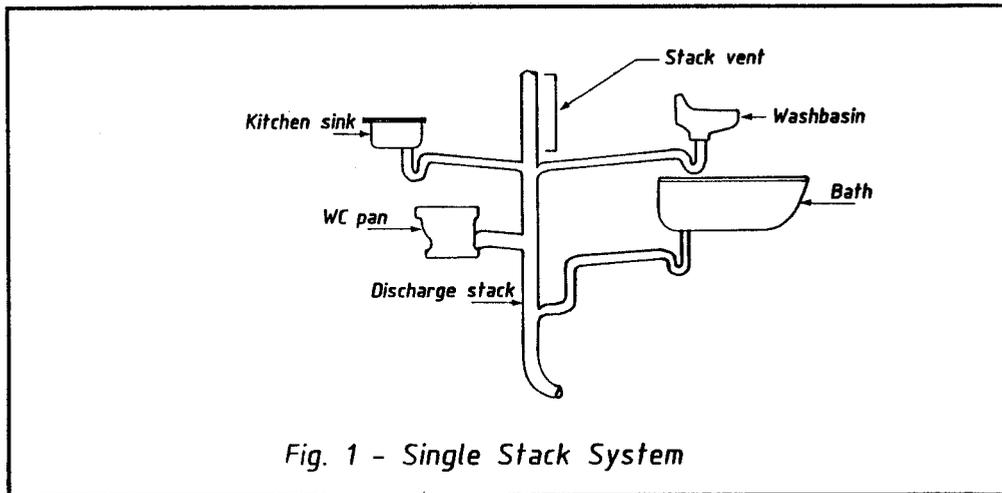


Fig. 1 - Single Stack System

Drq.11033/E

Figure 2 illustrates a stub stack in a closed system.

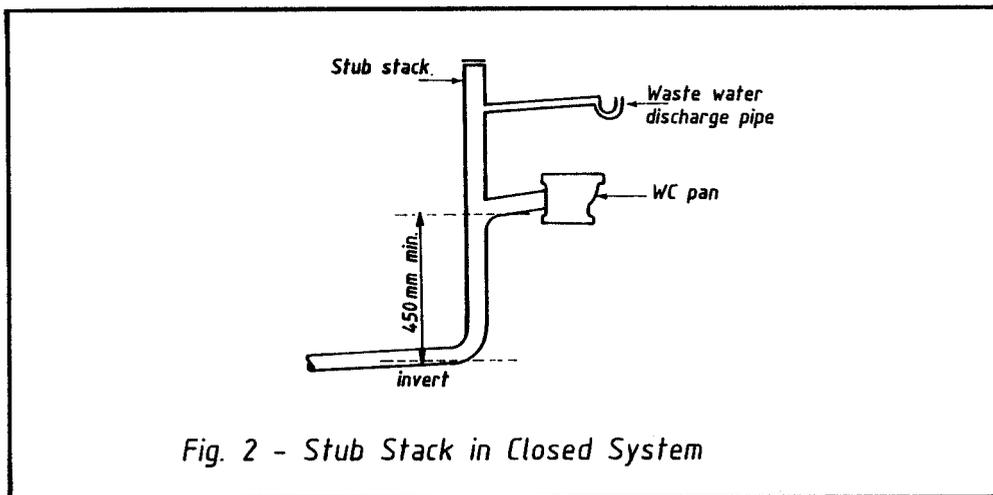


Fig. 2 - Stub Stack in Closed System

Drq.11034/E

TABLE 11 — MINIMUM DISCHARGE STACK AND SUPPLEMENTARY VENT STACK SIZES AND REQUIREMENTS FOR SINGLE STACK SYSTEMS: OFFICE OCCUPANCY

1	2	3	4	
Number of storeys served by discharge stack	Maximum number of sanitary fixtures in a range in each storey	Minimum nominal diameter of discharge stack, mm	Minimum nominal diameter of supplementary vent stack, mm	
1-4	Not exceeding 5 WC pans and 5 washbasins	100	Vent stack not required	
5-8	Not exceeding 2 WC pans and 2 washbasins		32	
	3 WC pans and 3 washbasins			40
	Exceeding 3 WC pans and 3 washbasins but not exceeding 5 WC pans and 5 washbasins			
9-12	Not exceeding 2 WC pans and 2 washbasins		32	
	Exceeding 2 WC pans and 2 washbasins but not exceeding 4 WC pans and 4 washbasins		40	
1-8	Not exceeding 5 WC pans and 5 washbasins	150	Vent stack not required	
9-24	Exceeding 3 WC pans and 3 washbasins, but not exceeding 5 WC pans and 5 washbasins		75	

NOTE: Where there are fewer washbasins than WC's in each storey the number of WC's shall determine the supplementary vent stack requirements.

PP15.4

The following requirements shall apply with regard to the one-pipe system (including the single stack system):

- (a) Any soil pipe shall be connected to another soil pipe, a stack or directly to a drain;
- (b) any waste pipe shall be connected to another waste pipe, a soil pipe, a stack, directly to a drain or to a gully which shall be connected to a drain;
- (c) any waste or any soil fixture trap may have a common ventilating pipe.

Commentary: Figure 3 illustrates a one-pipe system.

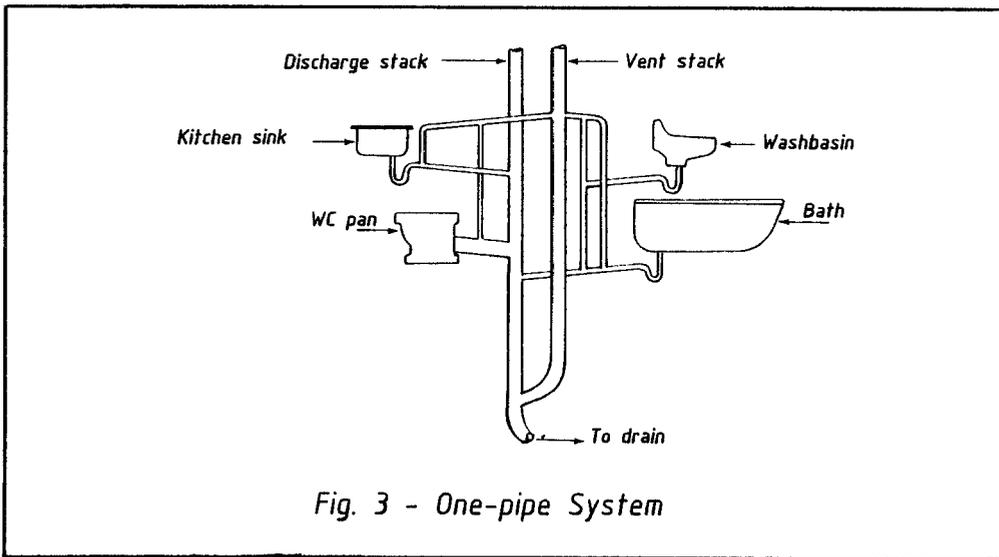


Fig. 3 - One-pipe System

Drg.11035/E

PP15.5

The following requirements shall apply with regard to the two-pipe system:

- (a) Any soil pipe shall be connected to another soil pipe, a stack or directly to a drain;
- (b) any waste pipe shall discharge into another waste pipe, a stack or to a gully which shall be connected to a drain;
- (c) any waste and soil fixture traps shall be separately ventilated.

Commentary: Figure 4 illustrates a two-pipe system.

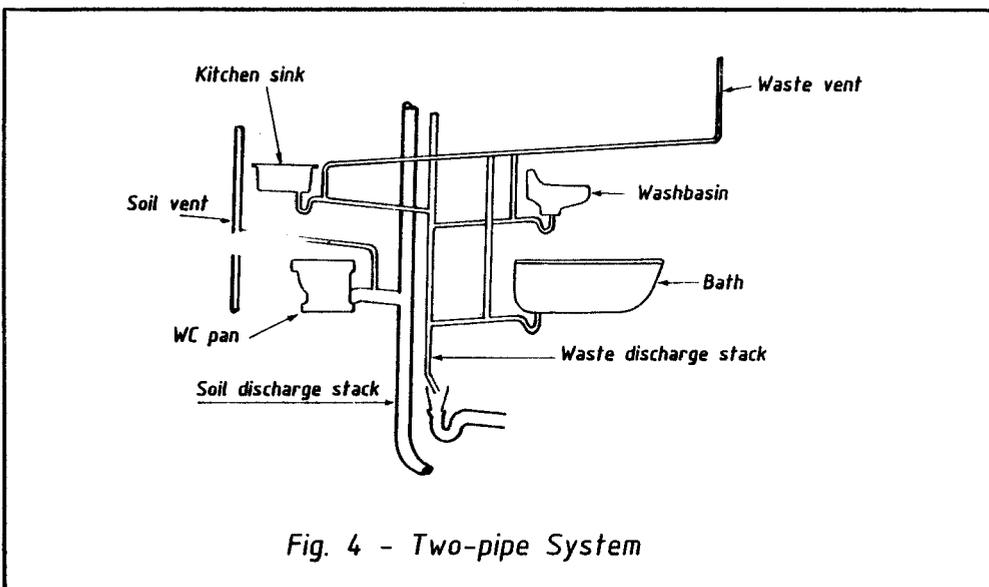


Fig. 4 - Two-pipe System

Drg.11036/E

PP16 SIZING OF DISCHARGE PIPES

PP16.1 The following requirements shall apply with regard to the sizing of any discharge pipe:

- (a) The nominal diameter of any discharge pipe shall not be less than the internal diameter of any pipe or outlet of any sanitary fixture which discharges into it: Provided that where the nominal diameter of any horizontal pipe in an offset is more than that of the discharge stack which discharges into it, the nominal diameter of such stack downstream of such off-set may be less than that of such horizontal pipe.
- (b) The internal diameter of any soil pipe other than a soil pipe from any urinal shall be not less than 100 mm .
- (c) The internal diameter of any waste pipe shall be not less than 32 mm if it serves a washbasin, bidet or drinking fountain and not less than 40 mm if such pipe serves any other waste fixture.
- (d) In the single stack system the internal diameter of any waste pipe shall be not less than 40 mm .
- (e) The hydraulic load carried by any discharge pipe which has a nominal diameter given in column 1 of Table 12 shall not exceed the number of fixture units given in columns 2, 3 or 4 as the case may be: Provided that where a horizontal pipe to which a discharge stack is connected is larger than such stack, any bend connecting such horizontal pipe to such stack shall have a nominal diameter equal to that of such horizontal pipe.

PP16.2 For the purposes of Tables 12 and 13, any waste pipe which has a diameter of 100 mm or greater and any soil pipe shall, subject to the requirements contained in subrule **PP16.3**, be deemed to be a drain from that point downstream of which the gradient of such pipe or of any drain to which it is connected does not again exceed 45° below the horizontal except where such pipe or drain is connected to any connecting sewer.

PP16.3 Where the diameter of any horizontal pipe at the base of a discharge stack is more than that of the drain to which it discharges, such horizontal pipe shall have a length of not less than 2,5 m, measured from the centre line of such discharge stack, before it is reduced in diameter and connected to such drain.

TABLE 12 — MAXIMUM PERMISSIBLE DISCHARGE PIPE LOADINGS

1	2	3	4
Maximum loading (fixture units)			
Nominal pipe diameter, mm	Discharge stacks	Fixture discharge pipes and branch discharge pipes	Horizontal discharge pipes other than pipes referred to in column 3
32	2	1	1
40	6	2	3
50	18	5	8
65	84	18	35
75	140	29	60
100	680	120	280
125	2 400	350	870
150	6 000	760	2 100

Commentary: Figure 5 illustrates the parts of a drainage installation.

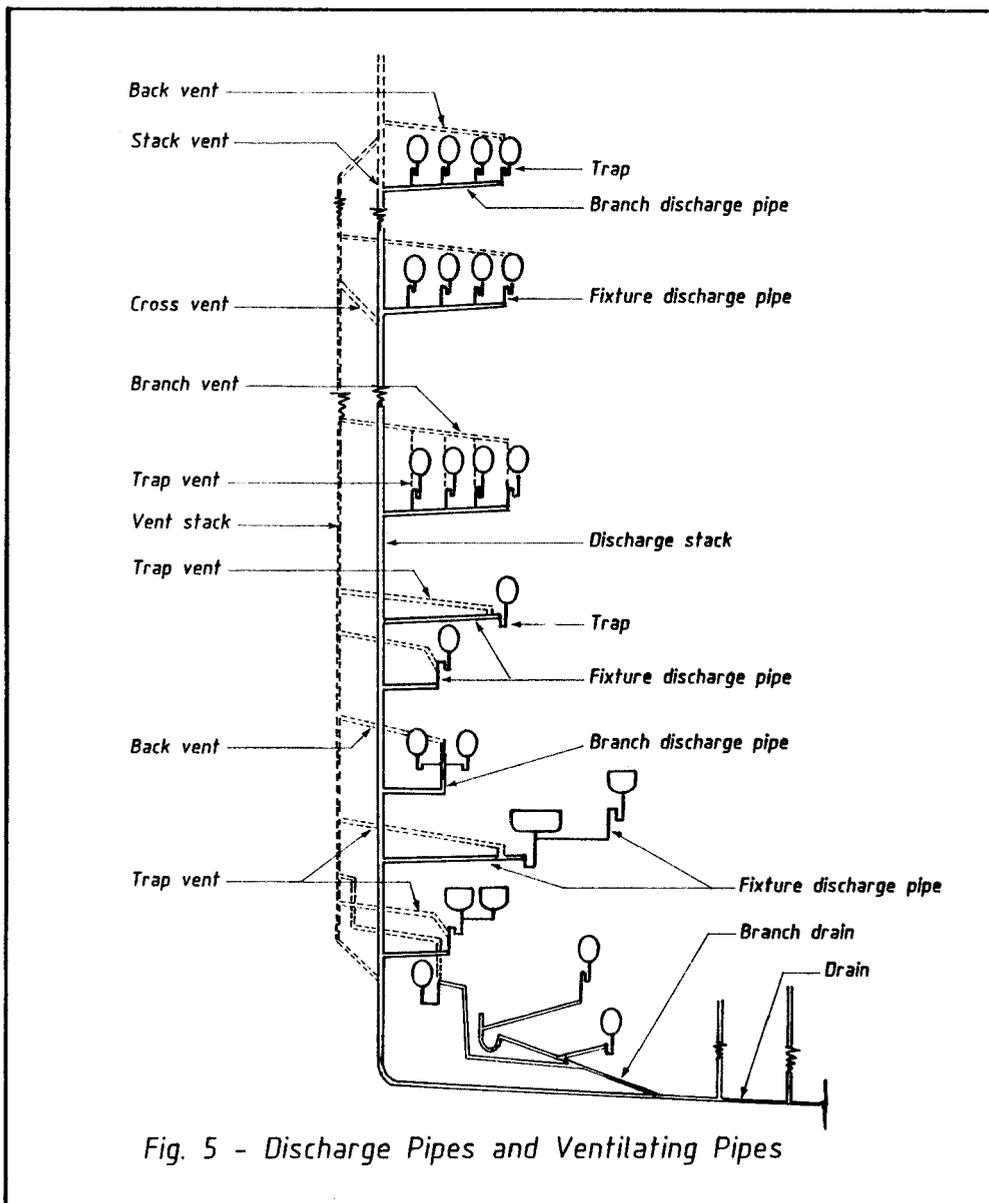


Fig. 5 - Discharge Pipes and Ventilating Pipes

PP17

SIZING OF DRAINS

The following requirements shall apply with regard to the sizing of any drain:

- (a) The nominal diameter of any drain shall not in any case be less than 100 mm .
- (b) The hydraulic load carried by any drain which has a nominal diameter given in column 1 of Table 13 and a gradient given in columns 2 to 14, as the case may be, shall not exceed the number of fixture units given in such table for such diameter and gradient of drain.
- (c) Where due to the slope of the ground any drain is required to be laid at a gradient steeper than 1 in 5 the hydraulic load carried by the drain shall not exceed that given in column 2 in Table 13 for a gradient of 1 in 5.

TABLE 13 — MAXIMUM PERMISSIBLE DRAIN LOADS

1	2	3	4	5	6	7	8	9	10	11	12	13	14
Nominal pipe diameter, mm	Maximum load (fixture units)												
	Drains having a gradient of												
	1 in 5	1 in 10	1 in 20	1 in 40	1 in 60	1 in 80	1 in 100	1 in 120	1 in 150	1 in 200	1 in 300	1 in 400	1 in 500
100 (110 OD)	12 000	9 000	6 400	4 500	3 650	3 150 (sp)	2 800 (sp)	2 550 (sp)	np	np	np	np	np
150 (160 OD)	40 000	27 000	19 000	13 500	11 000	7 500	8 400	7 700	6 900	6 000	np	np	np
200	75 000	56 000	40 000	28 500	23 000	20 000	18 000	16 500	15 000	13 000	10 600	np	np
225	105 000	76 000	54 000	38 000	31 000	27 000	24 000	22 000	19 500	17 000	14 000	np	np
250	—	100 000	72 000	51 000	41 000	36 000	32 000	29 000	26 000	22 500	15 500	16 000	np
300	—	165 000	117 000	82 000	67 000	58 000	52 000	47 500	42 500	37 000	30 000	26 000	23 500
375	—	295 000	210 000	148 000	125 000	104 000	93 000	85 000	76 000	66 000	54 000	47 000	42 000

np = not permitted.

sp = special permission required from local authority.

OD = nominal (outside) diameter for non-metallic pipes.

PP18 PROTECTION OF WATER SEALS

PP18.1

The following requirements shall apply with regard to the preservation of any water seal under working conditions:

- (a) The water seal contained in the trap of any soil fixture shall subject to the requirements contained in subrule **PP15.1** be protected by a trap vent where the discharge from such soil fixture is conveyed by —
 - (i) an unventilated branch drain or soil pipe which has a fall exceeding 1,2 m within 300 mm of the outlet of the fixture trap;
 - (ii) an unventilated soil pipe which receives the discharge from any other soil fixture;
 - (iii) a discharge stack which receives at higher level the discharge from any other soil fixture; or
 - (iv) a soil branch which receives the discharge from any other soil fixture: Provided that such trap vent may be omitted in the case where a soil fixture discharges to a soil branch where —
 - (aa) the hydraulic load carried by such soil branch does not exceed 50 fixture units;
 - (bb) such soil branch is served by a 100 mm diameter back vent; and
 - (cc) not more than 16 soil branches discharge into the same discharge stack.

PP18.2

Without prejudice to the requirements contained in subrule **PP18.1** —

- (a) in the case of any installation of the two-pipe system the water seal in the trap of any waste fixture shall be protected by a trap vent unless a resealing trap is fitted to such fixture: Provided that this requirement shall not apply to any single bath, shower or sink which discharges independently into a gully where such bath, shower or sink is situated within 2 m vertically above and 3 m horizontally from such gully;
- (b) in the case of any installation of the one-pipe system the water seal in the trap of any waste fixture shall except in the case of the single stack system, be protected by a trap vent.

PP18.3

The water seal in the trap of any waste fixture which is required to be protected in terms of subrule **PP18.2** may as an alternative be protected by a vent valve.

- PP18.4** A ventilating pipe shall be provided for any —
- (a) main drain or branch drain at a point not more than 6 m from the head of such main drain or branch drain, as the case may be, where such head is deemed to be the centre-line of the discharge stack or vertical discharge pipe to which such main drain or branch drain is connected:
- Provided that such ventilating pipe shall not be required —
- (i) for any branch drain where the length, measured along such branch drain from its head to the point of connection to any ventilated main drain, is not more than 6 m; or
 - (ii) where such main drain or branch drain is connected to a discharge stack having a stack vent.
- (b) soil branch which receives the discharge from only one sanitary fixture and which exceeds 6 m in length measured along such branch from the outlet of the trap of such fixture to the point of connection to any ventilated soil pipe;
 - (c) waste pipe longer than 6 m measured along such pipe from the outlet of the trap of any waste fixture discharging to it, to the point of discharge of such pipe into any gully or in the case of the one-pipe system, to the point of connection of the waste pipe with any ventilated soil pipe or any ventilated drain: Provided that such vent pipe may be omitted where the diameter of such waste pipe, as referred to in column 1 of Table 12, is increased by one nominal pipe size and the length of such waste pipe is not more than 10 m;
 - (d) waste branch longer than 6 m measured along such branch from the outlet of the trap of any waste fixture discharging into it, to its point of connection to any ventilated waste pipe.
 - (e) stub stack where —
 - (i) the crown of any WC trap connected to such stack is more than 1,5 m above the invert of the bend at the base of any such stack;
 - (ii) the topmost connection of a waste pipe to any such stack is more than 2 m above the invert of the bend at the base of any such stack;
 - (iii) any such stack serves more than one group of sanitary fixtures; or
 - (iv) any such stack serves branch discharge pipes to which ranges of sanitary fixtures are connected.

PP19 SIZING OF VENTILATING PIPES

- PP19.1** The following requirements shall apply with regard to the sizing of ventilating pipes:
- (a) Any drain or branch drain or any part thereof carrying a hydraulic load of not more than 50 fixture units shall have a ventilating pipe with a nominal diameter of not less than 40 mm .
 - (b) The diameter of any ventilating pipe shall be not less than that given in Table 14 for the relevant developed length of such pipe and the sum of the fixture units derived from any sanitary fixtures whose traps are ventilated, either directly or indirectly by such ventilating pipe.
 - (c) Any stack vent shall have a nominal diameter which is not less than that of the discharge stack to which it is connected: Provided that any stack vent connected to the following types of discharge stack may have a nominal diameter less than that of any such discharge stack but shall not have a nominal diameter of less than 40 mm;
 - (i) a stub stack, where a stack vent is required; and
 - (ii) a discharge stack of two storeys high serving a maximum of two groups of sanitary fixtures.
 - (d) Where any stack vent is connected to the top of any discharge stack such connection shall be at a point not less than 150 mm above the flood level of the highest positioned sanitary fixture in the drainage installation which discharges to such discharge stack: Provided that the nominal diameter of the stack vent connected to such discharge stack shall be not less than the nominal diameter of such discharge stack or not less than that required in terms of paragraph (c), whichever is the greater.

- PP19.2**
- (a) The developed length of any branch vent shall be measured from the point of its connection to a vent stack or stack vent to the furthest trap vent connected to such branch vent;
 - (b) the developed length of any back vent shall be measured from the point of its connection to a vent stack or stack vent to the furthest point of its connection to any discharge pipe; and
 - (c) the developed length of any vent stack shall be measured from the open end of such vent stack or, where such vent stack is connected to a stack vent, from the open end of such stack vent to the furthest trap vent served by it or its furthest point of connection to any discharge pipe, whichever is the greater.

TABLE 14 — SIZE OF VENTILATING PIPES

1	2	3	4	5	6	7	8	9	10	11	12	13
Maximum number of fixture units served by vent	Minimum nominal diameter of ventilating pipe, mm											
	32	40 (OD)	40	50 (OD)	50	65	75 (OD)	75	100 (110 OD)	125	150 (160 OD)	200
	Maximum developed length of ventilating pipe, m											
2	*											
6		*										
16		9	30	51								
48			9	30	51							
84			5	9	21	51	75					
128				9	15	36	60	90				
190				5	7	27	51	75				
1 000						7	18	24	96			
2 200							9	15	57	177		
3 800							5	7	27	75	195	
7 200									7	21	57	222

*Minimum vent size, unlimited length.

PP20 INSTALLATION OF DISCHARGE PIPES AND VENTILATING PIPES

- PP20.1** Any discharge pipe or ventilating pipe shall —
- (a) not cause electrolytic corrosion due to any association of dissimilar metals;
 - (b) not be deformed in any way that would restrict flow;
 - (c) be so installed that any bend does not form an acute angle and has the largest practicable radius of curvature with no change in the cross-section of the pipe throughout such bend;
 - (d) be safely supported at intervals along its length without restraining thermal movement;
 - (e) be so installed that the gradients, where applicable, are within the limits given in Table 15;
 - (f) be so installed as to be capable of withstanding the test referred to in rule PP27; and
 - (g) have means of access for internal cleaning.

- PP20.2**
- (a) (i) Where any discharge pipe is located within any building and it is desired that such pipe be enclosed it shall be enclosed within a duct: Provided that any part of such pipe may be built into brickwork or concrete where the interior of such part is rendered readily accessible for cleaning.
 - (ii) Such duct shall either be of a size and shape that any person can readily enter it and work therein or shall be provided with covers that can be readily removed to enable access to be gained to all junctions, bends and cleaning eyes.
 - (iii) Where in any room contemplated in subrule PP21.1(c) such duct is installed there shall be provided inside such duct a means which in

the event of any leak from any pipe therein will direct any released liquid or matter from the area of such room to a point of discharge where it shall be readily detectable.

- (b) Any pipe shall be so installed that the removal of any part of a building for the purpose of gaining access to such pipe will not endanger the structural stability of such building.

TABLE 15 — LIMITING GRADIENTS OF DISCHARGE PIPES

1		2		3		4		5	
Waste branches				Soil branches				Horizontal pipes other than branch discharge pipes	
Single stack system		Ventilated one- or two-pipe system		WC pan		Other soil fixtures		All systems	
Min.	Max.*	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1,25° (1/46)	5° (1/11,5)	1,25° (1/46)	5° (1/11,5)	5° (1/11,5)	14° (1/4)	2,5° (1/23)	5° (1/11,5)	2,5° (1/23)	45° (1/1)

*The maximum gradient of a waste pipe serving one or more washbasins only shall be 2,5° (1/23).

PP20.3 Any discharge pipe or any ventilating pipe shall be adequately protected against damage from vehicular impact.

PP20.4 Any ventilating pipe shall —

- (a) be carried upwards without any reduction in diameter and shall throughout its length be horizontal or so graded as to provide a continuous fall from its open end back to the discharge pipe or drain to which it is connected;
- (b) be so installed that its open end is —
 - (i) not less than 2,5 m above finished ground level;
 - (ii) not less than 100 mm above the closest part of the roof covering of the building through which it passes or to which it is attached;
 - (iii) not less than 2 m above the head of any window, door or other opening in the same building or any other building, whether on the same site or not, within a horizontal distance of 5 m of the said open end; and
 - (iv) not less than 2,5 m above the surface level of any roof slab covering the building which it serves where the slab may at any time be occupied by human beings;

PP20.5 Any trap vent shall be connected to the crown of the fixture discharge pipe on the outlet side of the protected trap at a point not less than 75 mm or not more than 750 mm from the crown of such trap and such trap vent shall, unless carried up independently, be connected to another ventilating pipe at a point not less than 150 mm above the flood-level of the sanitary fixture which such trap vent serves.

PP20.6 Where a two-pipe system is installed any ventilating pipe serving any soil pipe or any soil fixture shall not be connected to any ventilating pipe serving any waste pipe or waste fixture.

PP20.7 Where any supplementary vent stack is installed in addition to and adjacent to any discharge stack, such vent stack shall be connected to such discharge stack at a point below the lowest branch discharge pipe connection to such discharge stack and continued upwards, either independently or interconnected with such discharge stack, as prescribed in subrule **PP19.1(d)**.

PP20.8 The interconnection between any ventilating pipe and any discharge pipe or drain shall be so located and made that no soil water or waste water can under any circumstances be discharged through any ventilating pipe.

PP21

ACCESS TO DRAINAGE INSTALLATION

PP21.1

The following requirements shall apply with regard to the access to any drain:

- (a) Any drainage installation shall be so designed and constructed as to permit adequate access to the interior of any pipe in such installation for the purposes of inspection, testing and internal cleaning.
- (b) Where any discharge pipe enters the ground, adequate means of access to the interior of such pipe shall be provided within 2 m above the point of such entry.
- (c) Where any drain or discharge pipe passes through a room which is used as a kitchen, pantry or for the preparation, handling, storage or sale of any food the means of access to such drain or pipe, for cleaning purposes, shall be situated outside such room: Provided that this requirement shall not apply in the case of the waste pipe serving any waste fixture contained in such room.
- (d) Any access opening to a drain or discharge pipe installed within any building shall be covered by an adequately screwed or bolted airtight cover.
- (e) A rodding eye shall be installed —
 - (i) where there is a change in direction of the drain that exceeds 45°: Provided that where any bend which has a centre line radius of not less than 600 mm is installed such rodding eye may be omitted for not more than two such changes of up to 90° each between any two rodding eyes required in terms of paragraphs (e) (ii), (iii) and (iv);
 - (ii) at any point within 1,5 m of the connection of the drain to a connecting sewer, septic tank or conservancy tank: Provided that an inspection eye shall be installed immediately downstream of such point;
 - (iii) at the highest point of the drain; and
 - (iv) at such intervals along the drain that no rodding distance is more than 25 m measured along the line of such drain from a rodding eye or other permanent means of access to such drain;
- (f) Such rodding eye shall —
 - (i) join the drain in the direction of flow at an angle of not more than 45°, be continued up to ground level and be adequately supported; and
 - (ii) be adequately marked and protected.

PP21.2

The access contemplated in subrule **PP21.1** may subject to the requirements contained in subrule **PP21.7** be provided by the installation of an inspection chamber or manhole.

PP21.3

Any permanent access, contemplated in this rule, which is covered by any paved area of ground shall be covered by an adequate and appropriately marked removable device.

PP21.4

Where any part of a drainage installation passes under a building there shall be —

- (a) access provided to such installation outside of and as near as possible to such building at each point of entry to or exit from under such building; and
- (b) no access provided from within such building.

PP21.5

The lid covering any opening which gives access into any drainage installation shall be so sealed that such lid will remain effective under any working conditions.

- PP21.6** Any means, other than a manhole or inspection chamber, provided for access to any drainage installation shall —
- (a) have a removable cover and be so designed and constructed that it will sustain any normal load which may be imposed upon it and exclude the ingress or egress of water;
 - (b) be of such size and shape as to permit ready access to such installation for the purposes of inspecting, testing or cleaning, as the case may be; and
 - (c) when within any building, be so constructed as to be watertight when subjected to a maximum internal water pressure of 50 kPa .
- PP21.7**
- (a) Any manhole or inspection chamber shall be —
 - (i) located in an open air space;
 - (ii) so constructed and covered to prevent the ingress of water; and
 - (iii) of sufficient strength to sustain any load which may normally be imposed upon it.
 - (b) Any inspection chamber shall have a minimum plan dimension of not less than 450 mm .

Commentary: *The requirement that any manhole or inspection chamber shall be located in an open air space should not be taken to preclude location under the roof of a carport or any similar well ventilated area outside the building.*

- PP21.8** Where the connection between two sections of any drain are at different levels which necessitate a steep fall, the change in level shall be effected by one or more 22,5 ° bends which shall be connected to the shortest possible length of drain pipe connected in turn through one or more 22,5 ° bends to the lower drain.

PP22 **PROVISION OF TRAPS**

- PP22.1** Any sanitary fixture shall be provided integrally or immediately at its outlet with an effective self-cleaning trap except where such fixture is a bath, washbasin or shower which discharges into —
- (a) an open channel which shall —
 - (i) be made of impervious material;
 - (ii) have a semi-circular cross-section of diameter not less than 100 mm;
 - (iii) be accessible for cleaning throughout its length;
 - (iv) be fixed immediately beneath the point of discharge; and
 - (v) discharge into a gully; or
 - (b) an open channel serving a urinal where such bath, washbasin or shower is installed in the same room as such urinal.
- PP22.2** Any trap which is integral with a sanitary fixture shall —
- (a) have a smooth waterway; and
 - (b) be so constructed that any change from one cross-section to another does not cause an obstruction to the passage of solids.
- PP22.3** Any trap that is not integral with a sanitary fixture shall be made of non-absorbent and corrosion resistant material and shall be so constructed that —
- (a) it has a smooth waterway;
 - (b) there is no constriction;

(c) it has an outlet diameter which is not less than that of its inlet; and
 (d) it has at its lowest point a means of access for cleaning:
 Provided that this requirement shall not apply where the trap is made of rubber or other similar material.

PP22.4 The minimum nominal diameter of a trap connected to any sanitary fixture, and the minimum depth of its water seal shall be in accordance with those values given for the relevant fixture and installation in Table 16: Provided that the maximum depth of the water seal contained in any trap shall be 100 mm .

PP22.5 Where any trap serving any WC pan is provided with a vent horn, such horn shall have a nominal diameter of not less than 40 mm and shall be located at the side of and not less than 75 mm from the crown of such trap on its outlet side.

TABLE 16 — MINIMUM DIAMETER AND WATER SEAL DEPTH OF TRAPS

1	2	3	4	
Type of trap	Type of sanitary fixture	Type of installation	Minimum nominal diameter, mm	Minimum depth of water seal, mm
Integral	WC pan, hospital soil fixture Wall-mounted urinal	All	75 50	50 50
Non-integral	Bidet, drinking fountain, washbasin, wall-mounted urinal	Two-pipe system	32	40
		One-pipe system	32	40
		Single stack system	32	75
	Bath, shower, sink (hospital, kitchen or laboratory type), laundry trough, clothes-washing machine, dish-washing machine, food-waste disposal unit (all of the domestic type), sanitary-towel disposer	Two-pipe system	40	40
		One-pipe system	65	65
		Single stack system	40	75
	Clothes-washing machine, dish-washing machine, food-waste disposal unit, floor drain (all of commercial type)	All	50	75
Urinal of slab or stall type up to 3 units or 1,8 m in length	All	50	50	
Urinal of slab or stall type (all other), gully	All	75	50	

PP23**PROVISION OF GULLIES****PP23.1**

Subject to the requirements contained in subrules **PP23.2**, **PP23.3** and **PP23.4**, any drainage installation shall be provided with one gully.

- (a) The head of any such gully shall consist of —
 - (i) an overflow fitting covered with a removable cover which fits over the gully head and that permits overflow through a cross-sectional area not less than that of the trap of such gully, but that prevents the ingress of foreign matter directly from above; or
 - (ii) a hopper covered with a removable grating set in the gully head and the spaces between the bars of such grating shall be not less than 10 mm or more than 12 mm wide and shall provide an effective open area through such bars not less than the minimum cross-sectional area of the trap of such gully: Provided that such gully head may be dished, in which case the overflow level of such dish shall be not less than 75 mm above the level of the grating of such gully.
- (b) The overflow level of any such gully shall be not less than —
 - (i) 150 mm below the crown of the lowest trap serving any sanitary fixture in such installation: Provided that this requirement shall not apply to any sanitary fixture where its discharge is raised;
 - (ii) 150 mm above the surrounding ground or 50 mm above any permanent surrounding paving and such paving shall ensure drainage away from such gully.
- (c) The following requirements shall apply with regard to the trap of any such gully:
 - (i) The nominal diameter equivalent to its minimum cross-sectional area and the depth of its water seal shall be in accordance with the requirements contained in subrule **PP22.4**;
 - (ii) the surface level of the water in such gully shall be not more than 500 mm below the overflow level of such gully where such gully is a dished gully; and
 - (iii) the water seal in such gully shall be maintained by means of at least one waste pipe which discharges into such gully.

Commentary: *Although this subrule calls for installation of one gully this does not preclude more gullies being fitted, should they be required.*

PP23.2

A trapped floor drain may be installed within any building as a waste water outlet in any floor which shall slope at a gradient of not less than 1 in 200 from all sides towards any such floor drain: Provided that any such floor drain shall —

- (a) be so located that it is accessible;
- (b) be made of non-absorbent and corrosion resistant material;
- (c) have a minimum outlet diameter and a trap seal depth as contemplated in subrule **PP22.4**;
- (d) be provided with a removable grating, the open area of which shall be not less than two-thirds of the area of the waste pipe into which such outlet discharges; and
- (e) have its water seal maintained by means of —
 - (i) a tap situated above it; or
 - (ii) a waste fixture located in the same room, the outlet of which will discharge waste water directly into the gully above the level of the water seal in such a manner as not to overflow onto the floor.

- PP23.3**
- (a) A suitable grease trap shall be provided to take the discharge of waste water from any sink or other fixture —
 - (i) in any building where waste water is to be discharged to a french drain; and
 - (ii) where the discharge of grease, oil or fat may cause an obstruction to the flow in any drain or sewer or may interfere with the efficient operation of any sewage disposal system.
 - (b) Any such grease trap shall be designed and constructed to have a removable lid or a manhole cover which shall permit the effective removal of grease, oil, fat or solid matter.
 - (c) No person shall permit any accumulation of grease, fat, oil or solid matter in any grease trap tank or chamber, which will prevent the effective operation of such grease trap tank or chamber.

PP23.4 Any paved area upon which petrol or oil or wash-water contaminated with petrol or oil may fall shall be graded and drained to a gully which shall discharge into a suitable petrol and oil interceptor trap which shall discharge into a drain.

PP23.5 The surface level of the water in any gully trap shall be not more than 500 mm below the top of a dished gully except that where it is impracticable so to comply the gully trap shall be located in a manhole which shall have its walls brought up to a height of not less than 150 mm above the surrounding ground and the access to such manhole shall be covered with a metal grating of such a strength as to sustain any load which may normally be imposed upon it.

PP23.6 Any waste pipe which discharges into any gully shall discharge at a point above the surface of the water seal of the gully trap but not more than 100 mm above the level of the grating.

PP23.7 Any gully shall be situated outside the building or be situated in any place which is permanently open to the external air and shall in either case be accessible for cleaning and maintenance: Provided that a gully may be installed within a building as a waste water outlet in a floor and be so located that it is easily accessible and such floor shall slope at a gradient of not less than 1 in 200 from all sides towards such gully.

PP23.8 The outlet contemplated in subrule **PP23.7** shall be made of non-absorbent and corrosion resistant material and shall have a minimum diameter of 50 mm .

PP24 **INSTALLATION OF DRAINS**

PP24.1 Where any drain is constructed adjacent to or under or through a structural part of any building adequate measures shall be taken to ensure that the trench in which such drain is laid in no way impairs the stability of such building or the stability of any other building or interferes with or affects any existing services.

PP24.2 Where any portion of any drain passes under any building such portion shall —

- (a) be protected against the transmission of any load to it;
- (b) be laid without change of direction or gradient;
- (c) not be provided with any means of access for cleaning from inside such building.

PP24.3 Where any portion of a drain passes through a building such portion shall be —

- (a) supported throughout its length without restricting thermal movement and such support shall be securely attached to the building; and
- (b) so placed that any junction, bend or any point of access into it is readily accessible.

- PP24.4** Any drain shall —
- (a) be laid in a straight line between any points where changes of direction or gradient occur; and
 - (b) be laid with approved flexible joints which will permit joint movement to take place throughout the life of the drainage installation, withstand root penetration and not deteriorate when in contact with sewage or water and will not cause any obstruction in the interior of such drain;
 - (c) be laid at a gradient, suitable for the hydraulic load to be carried by such drain, as given in Table 13; and
 - (d) where its gradient may exceed 1 in 5 anchor blocks shall be provided to securely fix such drain in place.

- PP24.5** Any drain shall have —
- (a) soil cover over the outside of the drain of not less than 300 mm; or
 - (b) precast or cast-in-situ concrete slabs placed over such drain, isolated from the crown of the pipe by a soil cushion not less than 100 mm thick and such slabs shall be wide enough and strong enough to prevent excessive superimposed loads being transferred directly to the pipes.

- PP24.6** Where any drain has a branch drain connected to it such connection shall —
- (a) be by means of a junction fitting which shall not be a saddle junction;
 - (b) enable the flow from such branch drain to enter the drain obliquely in the direction of flow so that the included angle between the axes of the two drains does not exceed 45°.

PP25 COMMON DRAINS

Drainage installations on any two or more sites, whether such sites are in the same ownership or not, may be permitted to discharge into a connecting sewer through a common drain.

PP26 TEST FOR DRAINS

After any drainage installation has been completed and back-filled the drains shall be tested as follows:

- (a) An air test conducted by pumping air into such drains under a pressure of not less than 0,35 kPa (35 mm head of water) shall be performed.
- (b) Such drains shall be deemed to have passed such test if the pressure after 3 minutes is not less than 0,25 kPa (25 mm head of water).

PP27 TESTS FOR DISCHARGE PIPES AND VENTILATING PIPES

After any drainage installation has been completed the discharge pipes and ventilating pipes shall be tested as follows —

- (a) All traps shall be filled with water;
- (b) the outlets of all ventilating pipes shall be plugged;
- (c) the air test given in rule **PP26** shall be applied and the criterion for passing the test shall apply.

PP28 IN-SITU PERCOLATION TEST FOR SOILS

PP28.1 For the purpose of establishing the suitability of any soil in which a french drain is to be constructed the following test procedure and evaluation shall be carried out.

- PP28.2**
- (a) A test hole or, where necessary, a number of holes uniformly spaced shall be excavated on such site to a depth estimated for the proposed french drain.
 - (b) The bottom 350 mm of such hole shall have a diameter of 300 mm or have a plan shape 300 mm square.
 - (c) The sides of such bottom part shall be roughened to provide a natural infiltration surface.

- (d) Any loose material shall be removed from the bottom of such hole and shall be replaced with a 50 mm thick layer of gravel to prevent scouring when such hole is filled with water.

PP28.3

- (a) Such hole or holes shall be filled with water to a height of not less than 300 mm above such gravel and maintained at such a level for a period of not less than 4 hours.
- (b) At the end of the period contemplated in paragraph (a) the level of the water in such hole or holes shall be marked and the time noted.
- (c) The drop in level of such water as it soaks away over a subsequent period of 30 minutes shall be measured: Provided that if all the water percolates away before such 30 minutes, the actual time taken for this to occur shall be measured.
- (d) The percolation rate shall be reported as the time taken for such water level to drop 25 mm: Provided that where a number of holes are tested the average percolation rate for the site shall be calculated and such average shall be used as the percolation rate for the french drain effluent.

PP28.4

Where such percolation rate is less than 30 minutes the soil on the site shall be deemed suitable for the construction and use of a french drain.

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PART Q NON-WATER-BORNE MEANS OF SANITARY DISPOSAL

REGULATIONS

Q1 MEANS OF DISPOSAL

Where water-borne sewage disposal is not available other means of sewage disposal shall be permitted by the local authority: Provided that in the case of chemical or pail closets a satisfactory means is available for the removal and disposal of sewage from such closets.

Q2 PERMISSION

No person shall construct any pit latrine without the permission of the local authority.

Q3 CONSTRUCTION, SITING AND ACCESS

(1) Any such other means of sewage disposal shall be so constructed, sited and provided with access that the health and convenience of persons using such means shall not be adversely affected.

(2) The number of sanitary receptacles shall be adequate for the population of the building served by such receptacles.

(3) (a) The requirements of subregulation (1) shall be deemed to be satisfied where the construction, siting of, and access to such other means of sewage disposal complies with Part Q of section 3 of SABS 0400.

(b) The requirements contained in subregulation (2) shall be deemed to be satisfied where the number of receptacles is in accordance with the requirements for the provision of sanitary fixtures contained in regulation F11 or P2, as the case may be.

DEEMED-TO-SATISFY RULES

QQ1 GENERAL

The regulations contained in Part Q of the National Building Regulations shall be deemed to be satisfied where the means of sewage disposal used complies with deemed-to-satisfy rules contained in the following provisions of this Part.

QQ2 CONSTRUCTION

QQ2.1 Any closet shall be constructed with a floor, walls and a roof of material adequate for its purpose and such closet shall be provided with a door or other means which will ensure privacy of the occupant of such closet.

QQ2.2 Any closet shall be provided with an opening which will give natural lighting and ventilation and the area of such opening shall be not less than 0,2 m².

QQ2.3 Any pan, pail or container and any other fitting related thereto shall be adequate for the purpose for which it is to be used.

- QQ2.4** (a) Any closet shall be provided with a seat and a riser of such height that a space of not more than 25 mm is left between the underside of such seat and the top of the receptacle; and
(b) the aperture in such seat shall be at least 25 mm less in every diameter than the corresponding diameter of the top of such receptacle and such aperture shall be fitted with a self-closing flyproof lid.
- QQ2.5** For the purpose of guiding any pail into its central position beneath the aperture in such seat, guides shall be provided either in the floor of the closet or on the underside of such seat.
- QQ3 SITING**
- QQ3.1** No excavation for a pit latrine shall be sited within 3 m of any building or of any boundary of the site on which it is located.
- QQ3.2** Where any excavation for a pit latrine is positioned outside the closet so that excreta is delivered into it from a chute fitted under the closet seat such excavation shall be adequately covered over.
- QQ3.3** Where any closet, other than a chemical closet, forms part of any dwelling house such closet shall be so positioned and constructed as to prevent the transmission of odours to the rest of such house.
- QQ3.4** No closet, other than a chemical closet, shall open directly into any habitable room.
- QQ3.5** Any closet which is not a chemical closet shall have direct access from the open air or from a permanently ventilated space.
- QQ3.6** Any closet which contains a removable pail shall be provided with access to such pail for replacement purposes so that the pail is not carried out through the doorway of such closet and such access shall be provided with a self-closing flyproof lid.

PART R STORMWATER DISPOSAL

REGULATIONS

R1 STORMWATER DISPOSAL REQUIREMENT

(1) The owner of any site shall provide suitable means for the control and disposal of accumulated stormwater which may run off from any earthworks, building or paving.

(2) Such means of stormwater disposal may be in addition to or in combination with any drainage works required in terms of regulation F4(2).

(3) The requirements of subregulation (1) shall be deemed to be satisfied where —

(a) the means of stormwater disposal is the subject of an acceptable rational design prepared by or under the supervision of a professional engineer or other approved competent person; or

(b) such means of stormwater disposal is provided in accordance with Part R of section 3 of SABS 0400: Provided that where a local authority is of the opinion that the conditions on any site render it essential for stormwater disposal to be the subject of a rational design, such local authority shall, in writing, notify the owner of such site of its reasons for the necessity for such design, and may require such owner to submit for approval plans and particulars of a complete stormwater control and disposal installation for such site and for any building erected thereon, based on such design.

R2 SAVING

(1) These regulations shall not be construed as requiring the installation in any building of any roof gutter or downpipe where other suitable means has been provided to ensure the disposal or dispersal away from such building of rainwater from the roof of such building.

(2) The regulations in this Part shall not apply to any site used exclusively for the erection of any dwelling house or any building appurtenant thereto: Provided that where, due to special site features, the discharge of stormwater from such site may cause significant damage, the local authority may require compliance with regulation R1.

DEEMED-TO-SATISFY RULES

RR1

GENERAL

The regulations contained in Part R of the National Building Regulations shall be deemed to be satisfied where the means of stormwater disposal complies with deemed-to-satisfy rules contained in the following provisions of this Part.

RR2

STORMWATER DISPOSAL

Any means of stormwater disposal on any site shall include —

(a) in the case of any building on such site, roof valleys and gutters and downpipes or, where gutters and downpipes have not been provided, other means of ensuring that stormwater from any roof is controlled and will flow away from such building; and

(b) any surface stormwater drains, channels or below-ground stormwater drains that may be necessary to convey stormwater away from such site or from one part to another part of such site.

RR3 VALLEYS AND GUTTERS

RR3.1 Any valley or gutter shall have a cross-sectional area of not less than that given in Table 1, for the rainfall region in question.

TABLE 1 — ROOF VALLEY AND GUTTER SIZES

1	2
Rainfall region	Internal cross-sectional area of valley or gutter per m ² of roof plan area served
Summer	140 mm ²
Year-round	115 mm ²
Winter	80 mm ²

RR3.2 Such requirements in respect of any downpipe shall be deemed to be satisfied where the internal cross-sectional area of such downpipe is not less than 100 mm² per 1 m² of roof plan area served by such downpipe: Provided that such internal cross-sectional area is not less than 4 400 mm².

RR4 ACCESS TO STORMWATER DRAINS

On any stormwater drain ready means of access shall be installed at such intervals that no part of such drain, measured along the line of such drain, is more than 40 m from such means of access.

RR5 CONNECTION TO STORMWATER SEWER

Where any stormwater sewer is available in any street or servitude abutting any site to be provided with stormwater drainage, the owner of such site shall, if so required by the local authority, at his own cost install one or more stormwater drains to be connected by the local authority to such stormwater sewer.

RR6 USE OF STREET SURFACE DRAINAGE SYSTEM

Where the local authority considers the capacity of any street surface drainage system to be adequate to accept the discharge of stormwater from any site it may permit such stormwater so to discharge: Provided that the owner of such site shall, where so required by the local authority, at his own cost provide one or more conduits to convey such stormwater to such street surface drainage system.

PART S FACILITIES FOR DISABLED PERSONS

REGULATIONS

S1 APPLICATION

(1) Facilities for disabled persons shall be provided in any building except the following:

(a) Any building of which the whole of the ground storey comprises one or more occupancies classified in terms of regulation **A20** as D4, H4, J1, J2 or J3;

(b) any building classified as H1 in terms of regulation **A20** where such building has less than 25 bedrooms;

(c) any building classified as H3 in terms of regulation **A20** and not provided with a lift; and

(d) any building where —

(i) there is a difference between the level of the ground storey and finished ground level immediately outside any door giving access to such ground storey; and

(ii) such difference in levels or, where there is more than one such door, the smallest of such differences, expressed in millimetres, is more than the overall floor area of such building expressed in square metres: Provided that such overall floor area shall, in any building equipped with a lift, be deemed to be the total floor area of all storeys served by such lift.

(2) Notwithstanding the provisions of paragraphs (a), (b) and (c) of subregulation (1), the provisions of Part S of these regulations shall apply to any building which is or contains a clinic or health centre registered in terms of the Health Act, 1977 (Act No. 63 of 1977).

S2 FACILITIES TO BE PROVIDED

(1) In any building contemplated in regulation **S1**, there shall be a means of access suitable for use by disabled persons, including those who are obliged to use a wheelchair or who are able to walk but who are unable to negotiate steps, from the outside of the building to the ground storey and, where such building contains a lift, from the ground storey to any other storey served by such lift.

(2) Where parking for more than 50 motor vehicles is provided in or in connection with any building having a means of access contemplated in subregulation (1), adequate parking space shall be provided for the parking of motor vehicles used by disabled persons and means of access suitable for the use of such persons shall be provided from such parking area, whether such parking area be inside or outside such building, to the ground storey of such building.

(3) Notwithstanding the requirements for means of access contained in subregulations (1) and (2), where a suitable means of access from outside such building or from any parking area contemplated in subregulation (2) is provided to any storey other than the ground storey of such building, access shall be provided from such storey to the ground storey of such building.

(4) Means of access, suitable for use by any person in a wheelchair, shall be provided to any auditorium or hall situated in any building contemplated in subregulation (1) and such auditorium or hall shall, in relation to its seating capacity, be provided with sufficient open space to accommodate an adequate number of wheelchairs.

(5) Where, in terms of regulation **P1**, toilet facilities are required in any building which —

(a) is a building contemplated in regulation **S1**; and

(b) has a means of access contemplated in subregulation (1),

an adequate number of such facilities shall be suitable for use by disabled persons and shall be accessible to such persons: Provided that toilet facilities shall not be required in any such building classified as H3 in terms of regulation **A20**.

(6) In any building provided with facilities for disabled persons any commonly used path of travel shall be free of obstructions which could impede or endanger the travel of such persons, or the presence of such obstructions shall be made evident in a suitable manner to persons with impaired vision.

S3 DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulation **S2** shall be deemed to be satisfied where —

(a) the facilities provided are in accordance with Part S of section 3 of SABS 0400; or

(b) such facilities are the subject of approved alternative proposals.

DEEMED-TO-SATISFY RULES

SS1 GENERAL

The requirements contained in regulation **S2** of the National Building Regulations shall be deemed to be satisfied where the facilities provided for disabled persons comply with deemed-to-satisfy rules contained in the following provisions of this Part.

Commentary: *For disabled persons to be able to play their full role in society it is essential that they should have certain facilities in the buildings in which they live, work or seek recreation. Guidance in regard to the requirements for such facilities is given in this part of the code but economic considerations may make it difficult to provide the facilities in all buildings. This fact has been acknowledged in the regulations in the form of an exemption from the requirements in the case of certain buildings. It is, however, recommended that every effort be made to provide such facilities in as many buildings as possible notwithstanding the fact that it may not always be a legal requirement. Where provision is made at the design stage for the necessary facilities within the building, any increase in cost should be minimal and entry to the building may be the only major problem. A factor to be considered is that some of these facilities can also be of benefit to many who would not generally be regarded as disabled persons.*

SS2 RAMPS

Any ramp provided for the use of persons in wheelchairs shall —

- (a) have a gradient, measured along the centre line, of not more than —
 - (i) 1:12 where the difference in level of the ends of the ramp is more than 400 mm; or
 - (ii) 1:10, where such difference in level is not more than 400 mm;
- (b) have a clear trafficable surface not less than 1,1 m wide;
- (c) have a surface constructed of a slip resistant material;
- (d) be provided with a landing for every 1,5 m of vertical rise, and such landing shall be not less than 1,2 m in length and have a width of not less than the ramp;
- (e) be provided, at the end adjacent to any entrance door to any building, with a level surface with a minimum length of 2 m, if such door opens towards such ramp or 1,8 m if such door opens away from such ramp and where any doorleaf or window swings over such surface, such doorleaf or window shall not obstruct movement of any such person;
- (f) be provided, at any change of direction between two straight sections of ramp, with a level landing of not less than 1,2 m in length measured along the centre line;
- (g) be provided with a handrail on the side where the change in level between the ends of the ramp is more than 600 mm, and such handrail shall —
 - (i) be positioned between 850 mm and 1 000 mm above the surface of the ramp;
 - (ii) be so finished off as not to present a hazard to any person using such ramp; and
 - (iii) follow the gradient of such ramp for the full length of the ramp;

- (h) be provided, where there is a difference in level between such ramp and any floor or ground level at the side of the ramp, with —
 - (i) a balustrade, as contemplated in regulation **M1**, where such difference in level is more than 600 mm; or
 - (ii) a balustrade, as aforesaid, or a raised kerb not less than 75 mm high, measured vertically above the surface of the ramp, where such difference in level is not more than 600 mm .

SS3**LIFTS****SS3.1**

In any passenger lift installation there shall be not less than one lift which shall —

- (a) have a minimum internal dimension of 1,1 m in width and 1,4 m in depth;
- (b) have a doorway with an unobstructed width of not less than 800 mm; and
- (c) be fitted with handrails on two sides at a height of between 850 mm and 1 000 mm above the floor level of such lift.

Commentary: *The requirements of subrule SS3.1 apply only where there is a lift installation. It is not the intention of these regulations that a lift for disabled persons should be supplied in any building where there would not otherwise be a lift.*

SS3.2

Where such lift is operated automatically, it shall comply with the following requirements:

- (a) Audible and visual warnings shall be provided in the lift lobby to indicate the opening of the lift doors.
- (b) Any control required to be operated by a passenger in such lift shall be positioned not higher than 1,2 m above the floor level of such lift.
- (c) The light level on the control panel in such lift shall be not less than 50 lux.

SS4**DOORS**

In any building contemplated in regulation **S1** —

- (a) the leaf of any single door and at least one leaf of a double door when in the 90° position shall provide a clear opening not less than 750 mm wide at right angles to the direction of travel.
- (b) any handle fitted to a doorleaf of any door in an emergency route or in a feeder route or in any compartment containing toilet facilities for use by disabled persons shall be of the lever type and be installed at a height of not more than 1,2 m above floor level.
- (c) any difference in level of the surface of a floor at any threshold shall be not more than 15 mm .

SS5**TOILET FACILITIES****SS5.1**

In any building contemplated in regulation **S1** there shall be one or more WC pans suitable for use by persons in a wheelchair: Provided that —

- (a) in any building which is a hotel, lodging house or hostel where —
 - (i) bedrooms are provided with private toilet facilities, at least one such bedroom in every 100 or part thereof shall be provided with a WC pan, washbasin and bath or shower for disabled persons;
 - (ii) bedrooms do not have private toilet facilities, there shall be provided, on each floor, at least one compartment containing a WC pan and a washbasin, and one containing a bath or shower or disabled persons;

- (b) in any building, not being a building contemplated in paragraph (a), where in terms of rule **PP13** a combined total of more than 20 WC pans and urinals are required to serve the total population, not less than two WC pans shall be provided for the use of disabled persons; and
- (c) any disabled person shall not be required to travel, from any point in such building accessible to such person, a distance of more than 200 m in order to reach any compartment containing such WC pan.

SS5.2

- (a) In any building where separate sanitary fixtures are required for each sex, any two compartments required to contain a WC pan or bath or shower, irrespective of the sex for which they are provided, may be replaced by one such compartment provided for the use of disabled persons of both sexes: Provided that the total number of sanitary fixtures is adequate.
- (b) The door of any such compartment containing toilet facilities shall be either a sliding door or, if hinged, shall open outwards, and where a locking device is fitted, the doorleaf shall be openable from the outside by the use of a suitable device, and such leaf shall be fitted with a suitable means of indicating whether the compartment is occupied.
- (c) Any compartment containing a WC pan for the use of disabled persons shall have a minimum area of 2,9 m² and a minimum plan dimension of 1,6 m .
- (d) A distance of not less than 450 mm or not more than 500 mm shall be provided between the centre line of the WC pan and the nearer side wall of such compartment, and approved grab bars shall be fixed to such nearer wall and the rear wall.
- (e) The distance from the front edge of the WC pan to the rear wall of such compartment shall be not less than 660 mm .
- (f) The top surface of the seat of the WC pan shall be not less than 460 mm and not more than 480 mm above the floor level.
- (g) Unless the WC pan is provided with a special back rest, the lid and seat thereof, when raised to the upright position, shall remain in such position.
- (h) The pan flushing control and toilet-paper holder shall be easily accessible to any person in a wheelchair.

SS5.3

- (a) Within any such compartment the washbasin shall be mounted without legs or pedestal, and the height from the floor to the top edge of such basin shall be not more than 830 mm .
- (b) Such washbasin shall have a vertical clearance of 650 mm from under the basin to the floor, measured at a point not less than 160 mm from the front of and under the basin.
- (c) Where a vanity slab is fitted in such compartment, the distance from the edge of the fascia to the inside of the bowl of the washbasin in such slab shall be not more than 80 mm, and such slab shall have a vertical clearance of 680 mm measured from the floor to the underside of the fascia.
- (d) Water taps supplying such washbasin shall be operated by lever handles, and the cold-water tap shall be within reach of any person sitting on the WC pan.

SS5.4

Any bath or shower cubicle provided for the use of disabled persons shall be so designed and positioned as to allow a person in a wheelchair to transfer to a seat in such bath or cubicle.

SS6**AUDITORIA AND HALLS**

Where any building contemplated in regulation **S1** contains one or more auditoria or halls fitted with fixed seating, floor space accessible to any person in a wheelchair shall be set aside for the accommodation of wheelchairs in such auditoria or halls and —

- (a) such space shall be situated adjacent to an exit door and shall be so arranged that any wheelchair will not obstruct any aisle or exit door; and
- (b) such space shall be of a size sufficient to accommodate —

- (i) one wheelchair where the number of fixed seats for which the auditorium or hall is designed is not more than 50;
- (ii) two wheelchairs where the number of fixed seats for which the auditorium or hall is designed is more than 50 but not more than 400; and
- (iii) three wheelchairs or a number of wheelchairs equal to 0,5% of the number of fixed seats for which the auditorium or hall is designed, whichever is the greater, where such number of fixed seats is more than 400.

SS7 OBSTRUCTIONS IN PATH OF TRAVEL

Where in any building contemplated in regulation **S1** —

- (a) the difference in levels at any step or other change in level in the floor along any path of travel is more than 25 mm a suitable ramp from one level to the other shall be provided for the use of disabled persons;
- (b) any part of a building, sign, light-fitting or other object protrudes more than 300 mm into or hangs over any path of travel and has a clearance of less than 2 m above the trafficable surface, a barrier commencing not higher than 300 mm above such surface shall be provided to indicate the presence and position of the inadequate headroom above.

SS8 PARKING

Where provision has been made within any building contemplated in regulation **S1**, or on the site on which such building is erected, for the parking of more than 50 motor vehicles —

- (a) At least one parking space per 200 or part thereof of the total number of parking spaces shall be provided for parking of vehicles used by disabled persons;
- (b) any parking space provided for vehicles used by disabled persons shall be of an approved length, shall be not less than 3,5 m wide and shall be situated on a level surface;
- (c) such parking space shall be located as near as possible to the means of access contemplated in subregulation **S2(2)** and **(3)** and shall be accessible thereto;
- (d) such parking space shall be clearly demarcated as being intended for the use of disabled persons only.

SS9 INDICATION OF EXISTENCE OF FACILITIES**SS9.1**

Where facilities for disabled persons have been provided in or in connection with any building, the existence and position of such facilities shall be indicated by —

- (a) exhibiting externally at the main entrance of and at any other approved position in such building, the international symbol as depicted in Appendix 1 to this code; and
- (b) exhibiting internally, in approved positions, such symbol, which shall be clearly visible, to indicate to disabled persons the route to and the entrance to such facilities.

SS9.2

The size of any such symbol shall be not less than 100 mm x 100 mm, and the symbol of a person in a wheelchair shall be in the colour yellow on a black background.

PART T FIRE PROTECTION

REGULATIONS

T1 GENERAL REQUIREMENT

(1) Any building shall be so designed, constructed and equipped that in case of fire —

(a) the protection of occupants or users therein is ensured and that provision is made for the safe evacuation of such occupants or users;

(b) the spread and intensity of such fire within such building and the spread of fire to any other building will be minimized;

(c) sufficient stability will be retained to ensure that such building will not endanger any other building: Provided that in the case of any multi-storey building no major failure of the structural system shall occur;

(d) the generation and spread of smoke will be minimized or controlled to the greatest extent reasonably practicable; and

(e) adequate means of access, and equipment for detecting, fighting, controlling and extinguishing such fire, is provided.

(2) The requirements of subregulation (1) shall be deemed to be satisfied where the design, construction and equipment of any building —

(a) is the subject of an acceptable rational design prepared by a professional engineer or other approved competent person; or

(b) complies with Part T of section 3 of SABS 0400: Provided that where any local authority is of the opinion that such compliance would not comply with all the requirements of subregulation (1), such local authority shall, in writing, notify the owner of the building of its reasons for its opinion and may require the owner to submit for approval a rational design as contemplated in paragraph (a).

T2 OFFENCES

(1) Any owner of any building who fails to —

(a) provide sufficient fire extinguishers to satisfy the requirements of subregulation T1(1)(e), or who installs fire extinguishers that do not comply with the relevant SABS specification, or who fails to ensure that such fire extinguishers are installed, maintained and serviced in accordance with SABS 0105; or

(b) maintain any other provision made to satisfy the requirements of subregulation T1(1)(e), shall be guilty of an offence.

(2) Any person who causes or permits any escape route to be rendered less effective or to be obstructed in any way which may hinder or prevent the escape of any person from a building in the case of fire or any other emergency shall be guilty of an offence.

Commentary: *The deemed-to-satisfy rules contained in Part T of this code are intended to be of general application but they have been drawn up with certain common types of buildings in mind. Where anything unusual or obviously different is to be designed it is important to resort to basic principles rather than to consider any detail that may be implied by deemed-to-satisfy rules. It is often possible to "trade-off" some requirements against others while still maintaining the life-safety which is the primary object of the regulations. In any rational design intended to satisfy regulation T1 it is necessary to make adequate provision to satisfy the following aspects:*

(a) It must be possible for persons to escape easily, rapidly and safely from the building. In particular it is important to consider —

- (i) the type of building;
- (ii) the contents of the building;
- (iii) the travel distances involved;
- (iv) whether the building is more than two storeys high;
- (v) the number of visitors likely to be in the building at any time;
- (iv) whether people are likely to be sleeping in the building or whether it is an "awake-and-aware" situation; and
- (vii) whether evacuation of the building will take place under the supervision of responsible persons.

(b) All reasonable precautions must be taken to prevent the spread of fire, within any building or from one building to another. This can be achieved by use of division, occupancy and tenancy separating walls and the provision of adequate fire-fighting equipment in the first case and by sufficient separation distance between buildings in the second.

(c) In any fire, smoke is probably the greatest danger to life and it is therefore essential that attention be given to means of smoke control and dispersal. Measures would include ventilation and extract systems, compartmentation by means of smoke control doors and automatic controls on air-conditioning systems to stop the passage of smoke through the system from one part of the building to another.

(d) An important aspect in the protection of both life and property is the provision of suitable and sufficient fire-fighting equipment. Particularly in the case where occupants in a building may be expected to be trained in their use, "first-aid" equipment such as fire extinguishers and fire hoses can play an important part in the control of any fire. Fixed fire-fighting equipment such as a sprinkler system can be of importance in controlling any outbreak of fire and reducing the spread of smoke and is thus of help to the fire brigade in rescue work and the eventual extinguishment of the fire. A sufficient number of hydrants placed at positions which will enable all parts of the building to be reached is essential to enable the fire brigade to complete its work of extinguishing any fire.

(e) Unless a fire can be brought under control very quickly by means of the "first-aid" fire fighting equipment provided, everything will depend upon the efforts of the fire brigade. It is therefore important that they be able to reach the building with their equipment and have easy access to the interior of the building. In tall buildings a fireman's lift is a necessity and emergency routes must remain usable for long enough not only to evacuate the building but also for the fire brigade to get in to fight the fire. If no other means is provided to extract smoke it may be necessary to have special panels which can easily be broken out by the fire brigade in order to vent smoke.

DEEMED-TO-SATISFY RULES

TT1

GENERAL

The requirements of regulation T1 shall be deemed to be satisfied where any building is designed, constructed and equipped in accordance with deemed-to-satisfy rules contained in the following provisions of this Part.

TT2

SAFETY DISTANCES

TT2.1

The external walls of any building shall be classified as one of the following types:

- (a) Type FR, which has a fire resistance equal to or more than that given in Table 1 for the occupancy in question;

- (b) Type F, which has a fire resistance of less than that given in Table 1, but when tested in accordance with SABS 0177: Part II, satisfies the requirements for stability and integrity for a period of not less than that given in Table 1 for the occupancy in question and such wall is constructed with non-combustible external cladding; or
- (c) Type N, which has a fire resistance of less than that given in Table 1 for the occupancy in question and has —
 - (i) combustible external cladding; or
 - (ii) non-combustible external cladding but such wall, when tested in accordance with SABS 0177: Part II, has failed to satisfy the requirements for either stability or integrity, or both, for the period given in Table 1 for the occupancy in question.

TABLE 1 — FIRE RESISTANCE OF EXTERNAL WALLS

1	2
Occupancy	Fire resistance, minutes
All occupancies except those mentioned below	30
B1, C1, D1, E1, E2, E3, F1, F3, J2 and J3	60
J1	120

- TT2.2** Where any external wall of a building is of Type FR and such wall does not contain any window or any other opening there shall be no restriction upon the safety distance for such wall.
- TT2.3** Where any external wall of a building is of Type F and such wall does not contain any window or other opening, the safety distance required shall be not less than the relevant figure given in column 2 of Table 2: Provided that —
- (a) for occupancy classified as J1, J2 or J3 the safety distance required shall be not less than the relevant figure given in columns 5, 4 or 3 respectively; and
 - (b) for any building classified H4, where the area of elevation facing any boundary is not more than 7,5 m², such safety distance may be reduced to 0,5 m.
- TT2.4** Where any external wall of any building is of Type N or where any building is provided with external walls containing windows or other openings, such building shall, subject to the requirements of subrule TT2.10, be so sited that a circle of radius equal to the safety distance given in Table 2 for the window area and occupancy concerned, drawn from any point on any such window or other opening in such external wall shall not intersect any lateral boundary of the site: Provided that this requirement shall not apply in respect of —
- (a) any building contemplated in subrule TT2.6;
 - (b) any such wall which faces a public place, railway siding reserve or any open space secured by an approved servitude on an adjoining site;
 - (c) any such wall of a ground or basement storey facing a lateral boundary on which is erected a free-standing wall which —
 - (i) is constructed of non-combustible material;
 - (ii) has a fire resistance of not less than that prescribed for such external wall;
 - (iii) is equal in height to that of the basement or ground storey, as the case may be; and
 - (iv) extends at each end beyond any window or opening concerned by a distance of not less than the difference between the minimum safety distance given in Table 2 and the actual boundary distance.

TABLE 2 — SAFETY DISTANCE D (metres)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Area of openings, m ² in elevation	Less than 5	5	7,5	10	30	50	70	90	110	130	150	170	190	210	230	250	270	290	310	330	350	370	390	410	430	450	500 or more
Occupancy class Low fire load where the fire load in a division does not exceed 25 kg/m ² (timber equivalent) A1; A2; A3; A4; A5; B3; C2; D3; D4; E1; E2; E3; G1; H1; H2; H3; H4; J3; J4	1,0	1,5	2,0	2,4	3,8	4,5	5,0	5,3	5,5	5,7	5,9	6,1	6,2	6,3	6,4	6,5	6,6	6,7	6,8	6,9	6,9	7,0	7,1	7,1	7,2	7,2	7,4
Moderate fire load where the fire load in a division is between 25 kg/m ² and 50 kg/m ² (timber equivalent) B2; C1; D2; F1; F2; F3; J2	1,5	2,0	2,2	2,5	4,6	5,5	6,0	6,4	6,7	7,0	7,2	7,4	7,5	7,7	7,8	8,0	8,1	8,2	8,3	8,4	8,5	8,5	8,6	8,7	8,8	8,8	9,0
High fire load where the fire load in a division exceeds 50 kg/m ² (timber equivalent) B1; D1; J1	2,0	2,7	3,5	3,7	6,2	7,3	8,0	8,6	9,0	9,3	9,6	9,9	10,1	10,3	10,5	10,6	10,8	10,9	11,1	11,2	11,3	11,4	11,5	11,6	11,7	11,8	12,0

Intermediate values from Column 3 to 28 may be interpolated.
The values contained in Column 4 to 28 approximate to those calculated using the following formulae:

Low fire load : $D = 2,75 \times \text{Log } A - \sqrt{\frac{1}{A}}$

Moderate fire load : $D = 3,25 \times \text{Log } (A - 3) - \sqrt{\frac{1}{A}}$

High fire load : $D = 2,25 \times \text{Log } (A^2 - 5) - \sqrt{\frac{5}{A}}$

Where A = the total area of window or other openings on one elevation of the division
D = the safety distance

Commentary: In Table 2 the terms "low fire load", "moderate fire load" and "high fire load" are used. These refer in each case to the amount of combustible material available in a particular occupancy and thus imply the degree of intensity of any fire when fully developed and also the duration of any fire which might occur in the occupancy in question. They have nothing to do with the ease of starting a fire or the degree of danger due to smoke or poisonous fumes that would be implied by the terms low, moderate or high fire hazard.

In the definition of "fire load" the calorific values referred to can be taken from the relevant tables contained in recognized handbooks.

The unit fire load can be expressed in calorific values (MJ/m²) or as timber equivalent (kg/m²). The conversion factor from megajoules per square metre to kilograms per square metre is 0,056 and from kilograms per square metre to megajoules per square metre, is 18.

- TT2.5** Where there are two or more buildings on the same site, or where any building has two or more divisions and —
- (a) where any external wall of any such building or division does not contain any windows or other openings, the distance between such external wall and a notional boundary line between such buildings or divisions shall be not less than the relevant requirement for safety distance contained in subrule **TT2.2** or **TT2.3** as the case may be; and
 - (b) subject to the requirements of subrule **TT2.10**, where any external wall of such building or division is of Type N or contains windows or other openings, any circle of radius equal to the safety distance given in Table 2 for the occupancy concerned, drawn from any point on any window or opening in the external wall of one such building or division, shall not intersect any circle of radius equal to the safety distance given in Table 2 for the occupancy concerned in the external wall of such other building or division, drawn from any point in any window or opening in the external wall of such other building or division: Provided that the intersection of such circles shall be permitted where —
 - (i) the included angle between such walls is more than 135°; or
 - (ii) the included angle between such walls is more than 90° and the distance between the nearest points on such windows or openings is more than 2 m.
- TT2.6** Any building classified H4 and having —
- (a) a plan area of not more than 80 m²;
 - (b) an area of any elevation facing a lateral boundary of not more than 25 m²; and
 - (c) windows or other openings in such elevation;
- shall be so situated that the distance between such elevation and such boundary shall be not less than 1 m: Provided that, for any building classified H4, where the area of elevation facing such boundary is not more than 7,5 m², such boundary distance may be reduced to 0,5 m.
- TT2.7** Notwithstanding the requirements contained in subrule **TT2.1**, any structural external wall shall when tested in accordance with SABS 0177: Part II, satisfy the requirement for stability for a period not less than that required in rule **TT7**.
- TT2.8** Without prejudice to the foregoing requirements where any division or any building is equipped with a sprinkler system the minimum safety distances given in Table 2 may be reduced to half the distances so given: Provided that in no case shall such reduced distance be less than 1 m.
- TT2.9** The requirements contained in this rule shall not apply —
- (a) to any parking shelter for vehicles where such shelter has no walls or has non-combustible walls and non-combustible roof covering;
 - (b) to any carport on the same site as any building classified H4.
- TT2.10**
- (a) Where any building is not divided into divisions the requirements contained in this subrule shall apply mutatis mutandis to the whole of the particular elevation of the building.
 - (b) The area of any window or opening or the sum of the areas of all windows or openings, as the case may be, in that portion of the elevation of the building between division floors and between division walls shall be calculated: Provided that —
 - (i) where portions of such elevation are at different distances from the boundary, another division of the same building or from another building, each such portion and the area of window or opening contained therein may be separately considered;
 - (ii) no window or other opening or portion of such window or opening

in any external wall of any building shall be taken into consideration in the calculation of the total area of windows or openings where the included angle between such wall and any boundary of the site, any external wall of any other division of the same building or any external wall of any other building on the same site is more than 30°, and such window, opening or portion thereof is situated more than 3 m from such boundary, other division or other building;

- (iii) where any building has external walls of Type N, the total elevation area of such walls shall be construed as being a window or opening for the purposes of this rule;
- (iv) where any garage on the same site as any building classified H4 is situated close to any lateral boundary of the site and in such a way that the doorway is at an angle of approximately 90° to such boundary —
 - (aa) any circle of radius equal to the safety distance required for an occupancy classified H4 and drawn from a centre located in the plane of the garage door at a point nearest to such boundary shall intersect a cut-off line drawn from the same point and at an angle of 45° to the plane of such door, at a position on or within such boundary; or
 - (bb) The side wall of such garage may be extended and the centre of such circle located at any point in the plane of the door that will enable such circle and the related cut-off line to intersect on or within such boundary: Provided that such wall extension shall be of a height not less than that of such door and of a length that will ensure that such cut-off line will simultaneously intersect the extension of such wall and such circle within the boundary.

Commentary: *Radiant heat from a fire can cause the spread of fire from one building to another and this danger can be reduced by the provision of sufficient distance between buildings. It should be noted, however, that the term "safety distance" is in all cases related to a single building and its distance from some boundary. The distance required between buildings is always the sum of two such "safety distances" although one or both such distances could be zero.*

The degree to which fire in any building is a danger to any other building is influenced by the behaviour of the external walls and whether or not they contain windows or other openings. The rules make provision for three classes of walls. Type FR does not limit the exterior cladding and either combustible or non-combustible cladding could be used. The fact that this type of wall has the required fire resistance is sufficient to ensure that, providing such walls contain no openings, radiant heat from a fire in any building having such walls will not present a danger to any other building providing such walls also contain no openings and that a fire will be contained for long enough to enable any necessary action to be taken.

A Type F wall does not have full fire resistance but because the requirements for stability and integrity are satisfied and only non-combustible cladding is allowed any fire will be contained for long enough to enable the same safety distances that would be required for a Type FR wall to be safely used under most circumstances. The fact that insulation requirements are not met could mean that radiant heat effects are somewhat greater than would be expected from a Type FR wall but this is not generally regarded as significant in terms of safety distance, except insofar as there are limitations placed on the minimum distance permitted between a Type F wall with no windows or other openings and a lateral boundary or another division or building.

For the purposes of these regulations a Type N wall is regarded as providing no protection against the spread of fire to any other building. In terms of safety distance this type of wall must therefore be regarded as the equivalent of a window or an opening.

When a fire occurs in a building radiant heat is emitted through windows or other openings and, similarly, enters buildings mainly through windows or openings. The distance between two walls both having the required fire resistance and no openings is therefore not restricted in any way.

The introduction of openings of any kind, or the use of Type F or Type N walls, will lead to an increase of radiant heat outside any burning building and, in adjacent buildings, to an increased danger of ignition of the contents of such buildings. The danger of spread of fire to other buildings is thus enhanced. The safety distances given in Table 2 are calculated on the basis that at the relevant distance any wall having the required fire resistance, and containing no openings, can withstand the effects of radiant heat. At this distance, however, the degree of radiant heat will still be sufficient to constitute a danger to an adjacent building if it is able to penetrate such building through windows or other openings.

In relation to the lateral boundaries of a site this means that a safety distance, as given in Table 2, must be allowed between any building and such boundaries since a building (with Type FR wall) could be permitted on the boundary of the adjoining site. Where two buildings on the same site are involved each building requires its own safety distance from a notional "boundary" line between them. This distance may be zero for either building where the building has Type FR walls with no openings. However, where either or both buildings have openings or Type F or Type N walls a danger due to radiant heat may occur. Hence, one or both buildings, as the case may be, will require a safety distance from such notional line between the two buildings.

Danger due to the effects of radiant heat will occur within some zone outside any window or other opening. This zone can be assumed to be bounded by cut-off lines at approximately 45° to the wall, extending out from such wall to a "safety distance" where the degree of heat no longer constitutes a threat to any other building providing such building has Type FR walls with no openings. Radiant heat diminishes in approximately inverse ratio to the square of the distance from the source and the safety distances given in Table 2 in this part of the code are calculated on this basis. The danger zone, shown in Figure 1, would thus be an area designated by points C, D, E, F, G and H where —
 $CE = \text{safety distance} = HF$.

The danger caused by radiant heat entering a building through windows or other openings can be assumed to occur in a similar zone, calculated in terms of the safety distance required for the occupancy concerned.

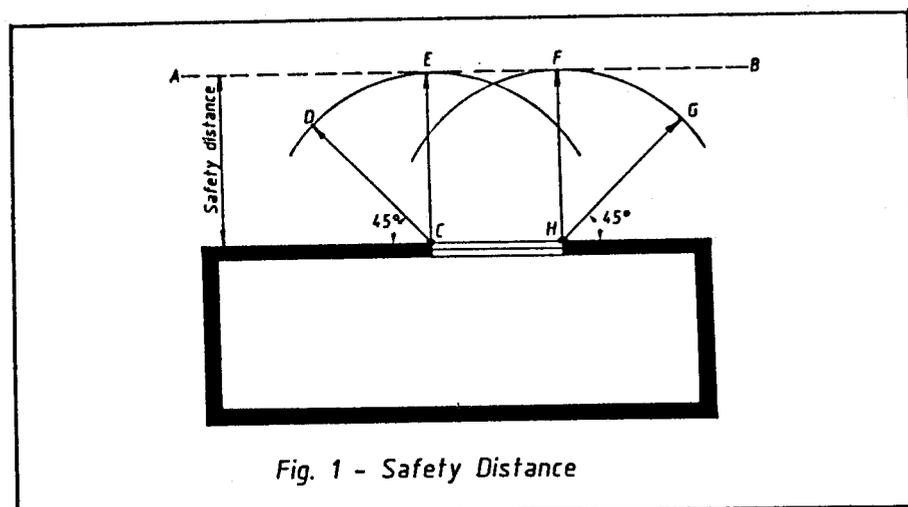
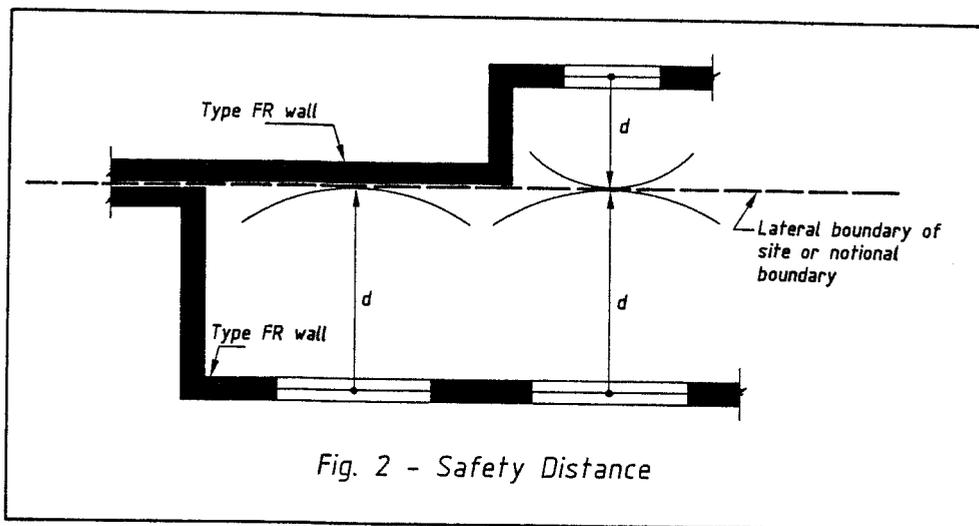


Fig. 1 - Safety Distance

In the case where there is, on the same site, a second building with windows opposite or nearly opposite those in the first building, any danger zone related to the one building would be assumed to extend to a notional boundary situated at a distance equal to the required safety distance from that building and another similar zone would exist between the second building and some notional boundary situated at an appropriate safety distance from the second building (see Figures 6 and 7). Where the two buildings are parallel to one another it may be possible to locate the buildings (or parts of the buildings) and position the windows in each building in such a way that the two notional boundaries coincide in a single line as shown in Figure 2. This would represent the minimum spacing between the two buildings. It should be noted that this notional boundary is not necessarily a straight line as its position will depend upon the relative position of windows in the two buildings.



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In order to determine from a plan whether the layout of buildings and the safety distances provided are satisfactory the following procedure should be adopted. From Table 2 in this part of the code read off the safety distance required for the type of occupancy and the window area of the building in question. Bear in mind that the figures in Table 2 may be modified in terms of subrule TT2.6, TT2.8 and TT2.10. Using this distance as a radius, draw a sector of a circle from any point on a window such as 1 in the building shown in Figure 3.

Repeat for other windows such as 2, 3 and 4. Draw the line AB which is tangent to these circles.

Bear in mind that the danger area is bounded by lines at 45° to the plane of the wall, as shown in Figure 1. The regulations will be satisfied if no boundary line or wall of any other building lies in the zone between line AB and the building shown. In Figure 3, therefore, the wall of any building or any boundary positioned on line EF would be acceptable but the wall of any building or any boundary on line CD would not. Note that where line EF represents the wall of another building the required minimum distance between lines AB and EF would be determined by the type of wall used in such building and the size of any openings in the wall.

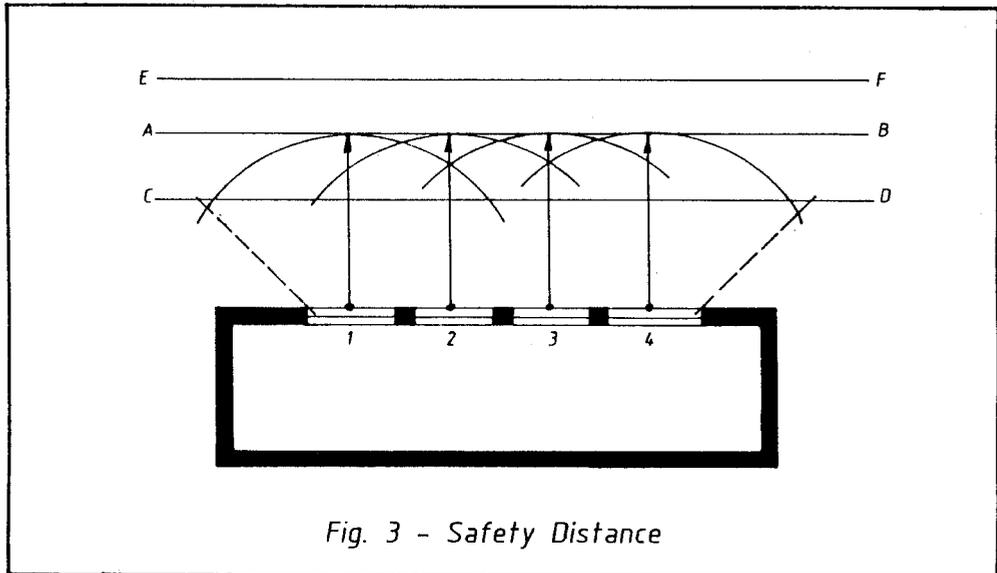


Fig. 3 - Safety Distance

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In the building illustrated in Figure 4 the two portions of the building may be considered separately for safety distance. The example given is acceptable in terms of distance from the boundary. Safety distance from portion B of the building would control the siting of the building in relation to the boundary even though B is further than A from the boundary.

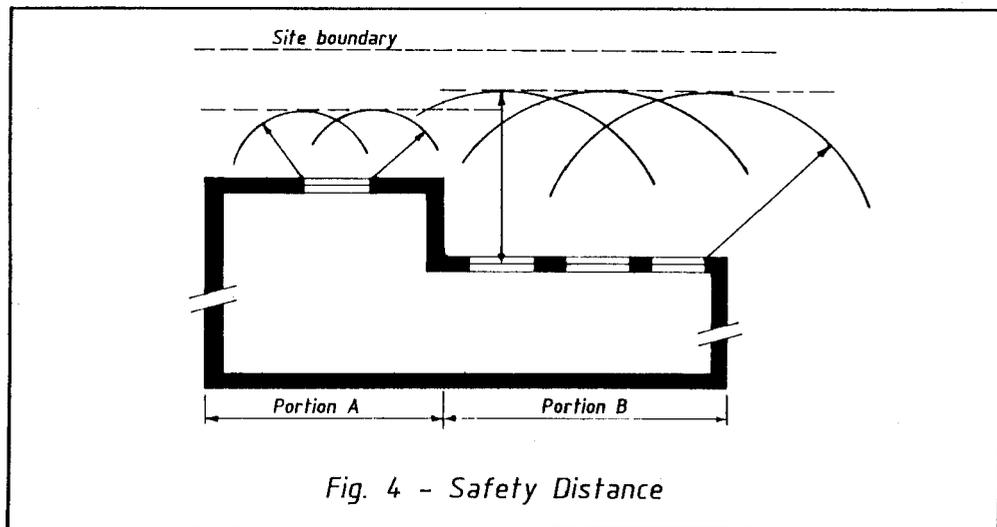


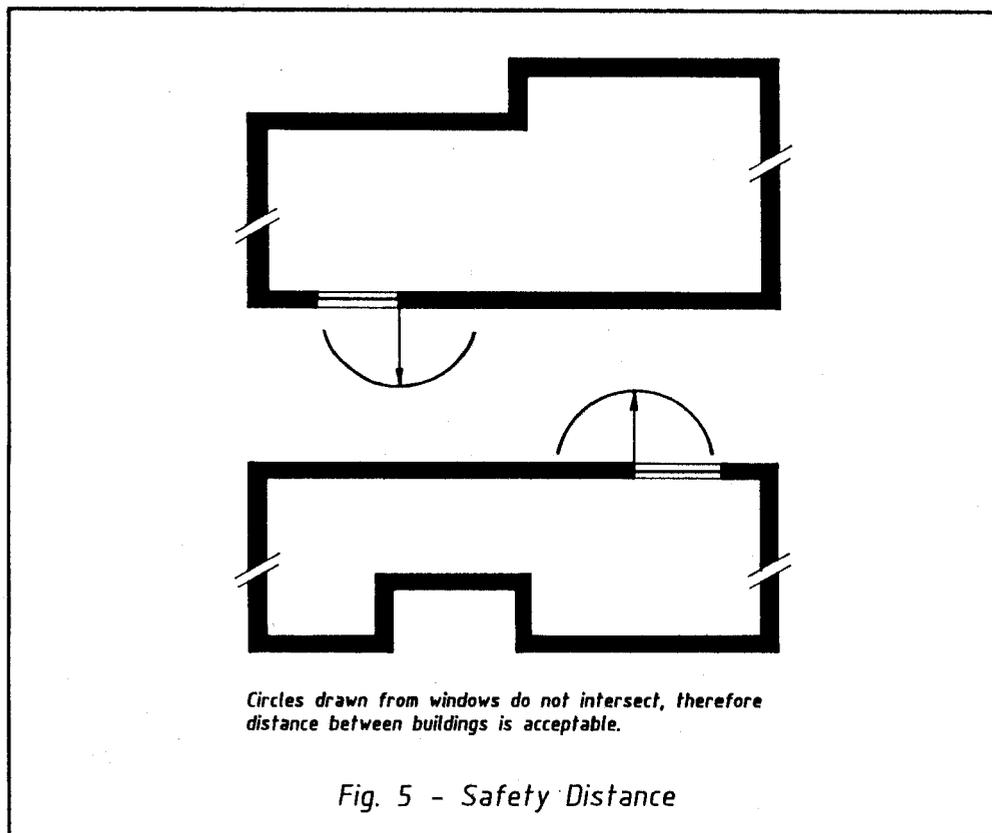
Fig. 4 - Safety Distance

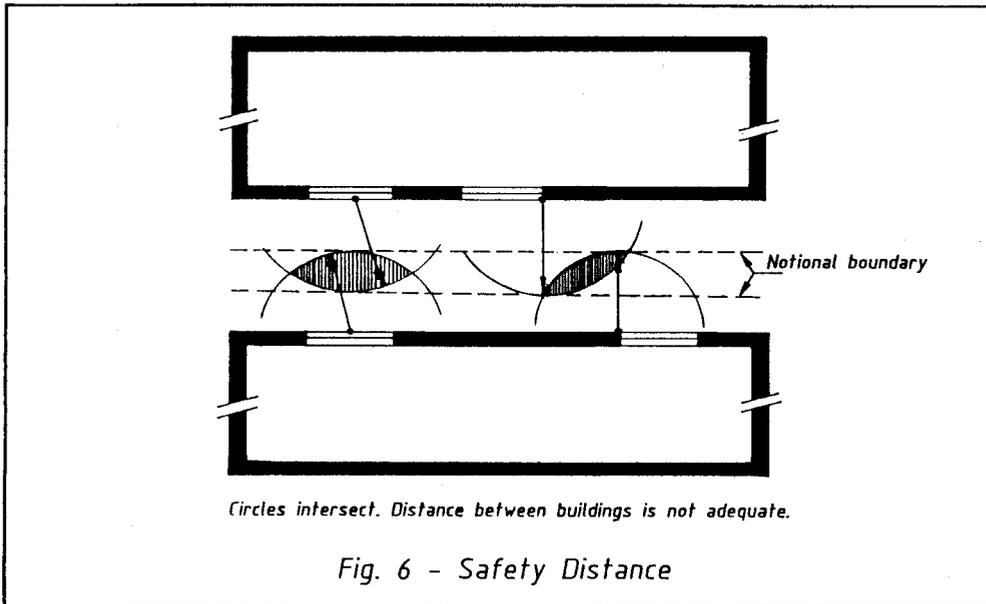
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The figures that follow illustrate certain common situations but it is not possible to illustrate all cases which might occur. In general it may be said that as long as no possible circle of radius equal to the required safety distance, drawn from any point on any window or other opening, intersects any boundary, wall of a building or any circle drawn from any opening in another building or in another division of the same building, the layout is acceptable. Although the figures illustrate the general rule it must not be forgotten that this is qualified by the provisions of subrule TT2.5 which allows certain exemptions from the rule subject to the limiting values given for the distance between windows and the included angle between such walls.

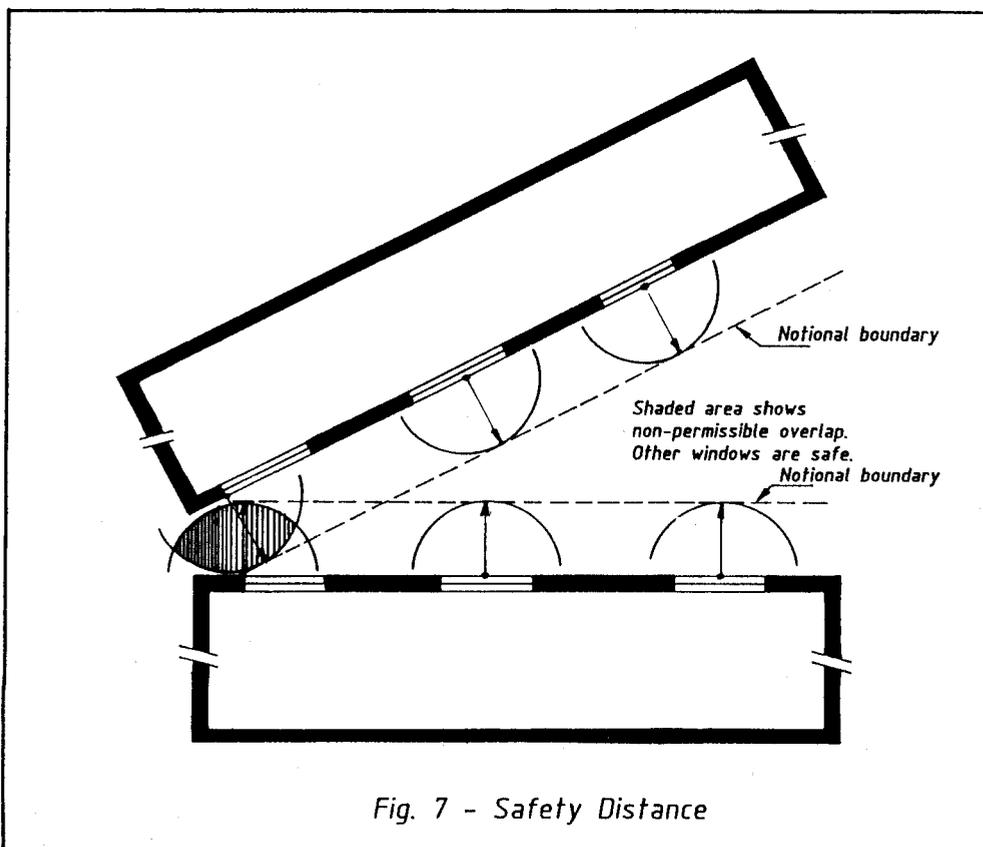
For two buildings both having windows, draw sectors of circles of the required radius from the windows in facing walls as shown in Figures 5, 6 and 7. None of the circles drawn from one building may intersect any circle drawn from the other.

Note that in many cases it will not be necessary to actually draw circles as the result will be obvious.





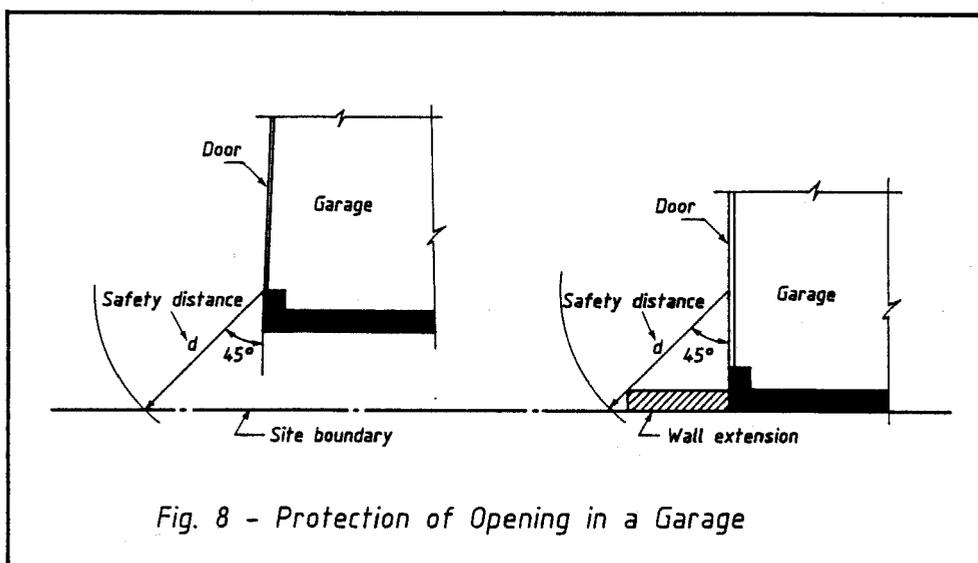
Drg.11042/E



Drg.11043/E

Where a garage on the same site as a building classified H4 is situated very close to a lateral boundary of the site any fire in such garage may give rise to some danger due to radiant heat from the door opening. It should be noted, however, that in terms of rule TT2.10(b)(ii) the area of the opening to be considered is rarely likely to be more than about 5 m². In order to test whether the distance to the boundary is adequate the usual method of drawing a circle (of radius equal to the required safety distance) from a point on the side of the door nearest to the boundary should be applied. If the garage is found to be too close to the boundary the necessary protection may be obtained by extending the side wall as shown in Figure 8. The required length of extension may be determined by adjusting the position of the centre of the circle so that the 45° line intersects the arc of the circle on the boundary line and touches the end of the wall.

Garages in any domestic occupancy represent a low fire load and it is therefore regarded as reasonable to treat any garage which is a component of an H3 occupancy in the same way as one on the site of an H4 occupancy provided that such garage is not large enough to fall within the description of a parking garage (occupancy J4). Garages attached to individual dwelling units in a town-house complex should thus be considered as if each dwelling unit was an H4 occupancy.



Drg.11044/E

TT3

DIFFERENT OCCUPANCIES IN A BUILDING

In any building there shall be permitted an area of —

- (a) not more than 100 m² of an occupancy classified J1 or not more than 300 m² of an occupancy classified J2 or J3, within any other occupancy;
- (b) not more than 100 m² of an occupancy not classified J1, within an occupancy so classified.

TT4

DIVISION AREA

Any building shall be divided into divisions of an area not more than that given in column 2, 3 or 4 of Table 3, as the case may be, and such divisions shall be separated effectively from each other by division separating elements: Provided that —

- (a) where an occupancy classified J1, used for the storage of flammable liquids, forms part of any building, such part shall be a separate division and the area of such division shall be not more than 100 m²;
- (b) where storage of goods is to a height of more than 3 m in any occupancy classified J1 or J2, an approved fixed installation of automatic fire extinguishment shall be provided.

TABLE 3 — MAXIMUM DIVISION AREA, m²

1	2	3	4
Occupancy	No fixed automatic fire extinguishment installation	With fixed automatic fire extinguishment installation	
		1 storey	2 storeys and over
*E1, *E2, *E3	1 250	1 250	1 250
A2, B2, B3, C1, C2, G1	5 000	No limit	10 000
A4, A5, D3, J3, J4	No limit	No limit	No limit
All other occupancies	2 500	No limit	5 000

*Maximum division area on any storey and all such divisions shall be interconnected.

TT5**FIRE PERFORMANCE: GENERAL****TT5.1**

Where any element or component of a building is required to have a particular fire resistance such requirement shall, in respect of the materials or method of construction of such element or component, be deemed to have been satisfied where —

- (a) such materials or methods are in accordance with the particulars set out in the Tables 11, 12, 13, 14, 15 and 16 contained in rule **TT56**;
- (b) a representative specimen of such element or component has been shown to have the required fire resistance when tested by the Council of the South African Bureau of Standards or the CSIR; or
- (c) an assessment, in writing, of such element or component has been made by the Council of the South African Bureau of Standards or the CSIR and such element or component has been found suitable for the particular purpose.

TT5.2

Where non-combustibility of any element or component is required in terms of these rules such requirement shall be deemed to be satisfied where —

- (a) such element or component is proved to be made only of the relevant material contemplated in rule **TT57**;
- (b) when tested by the Council of the South African Bureau of Standards or the CSIR a representative specimen of such element or component has been shown to be non-combustible; or
- (c) an assessment, in writing, of such element or component has been made by the Council of the South African Bureau of Standards or the CSIR and such element or component has been found to be suitable for the particular intended purpose.

TT5.3

In any building not being a building classified H4, any architectural or decorative feature may be constructed of combustible material where such material has been the subject of a favourable evaluation by the Council of the South African Bureau of Standards or the CSIR.

TT6**FIRE RESISTANCE OF OCCUPANCY AND DIVISION SEPARATING ELEMENTS****TT6.1**

Any portion of a building having an occupancy in any one of the groups of occupancies (a) to (g) contemplated below shall, subject to the requirements contained in rule **TT3**, be separated by means of an occupancy separating element from any portion of such building used for an occupancy in any other of such groups of occupancies:

- (a) A1, A2, A3, A4, C1, C2
- (b) A5
- (c) B1, D1
- (d) B2, B3, D2, D3, D4, F1, F2, F3, G1, J2, J3, J4
- (e) E1, E2, E3
- (f) H1, H2, H3
- (g) J1

TT6.2

- (a) Where any occupancy separating element is required in terms of subrule **TT6.1** such occupancy separating element shall have a fire resistance not less than that given in Column 2 of Table 4.
- (b) Where, in terms of rule **TT4**, a division separating element is required, such division separating element shall have a fire resistance of not less than the relevant figure given in column 2 of Table 4.

TABLE 4 — FIRE RESISTANCE OF OCCUPANCY AND DIVISION SEPARATING ELEMENTS

1	2
Occupancy	Fire resistance, minutes
All occupancies other than those referred to below	60
B1, C1, D1, E1, E2, E3, F1, F3, J1	120

TT7

FIRE STABILITY OF STRUCTURAL ELEMENTS OR COMPONENTS

- (a) Any structural element or component directly supporting a separating element contemplated in rule **TT6** shall, when tested in accordance with SABS 0177: Part II, satisfy the requirement for stability for a period not less than that required for fire resistance of such separating element.
- (b) Any other structural element or component (not being a component forming part of a roof assembly) which is located in an occupancy given in column 1 of Table 5 shall, when tested in accordance with SABS 0177: Part II, satisfy the requirement for stability for a period not less than that given in columns 3 to 7 for the height of the building so given.
- (c) The structural elements or components used in any basement which is not naturally ventilated shall comply with the requirements contained in column 7 of Table 5.
- (d) For the purposes of this rule any basement which is naturally ventilated shall be construed as being an additional storey to the building concerned and any structural elements or components used in such basement shall comply with the requirements contained in columns 3 to 6, as the case may be, of Table 5.
- (e) No unprotected steel shall be permitted in the structure in any basement.
- (f) Notwithstanding the requirements contained in paragraph (b) it shall be permissible for structural components to be of —
- (i) unprotected steel —
 - (aa) In any single storey building;
 - (bb) in any double storey building where the occupancy is classified A3, A4, A5, B2, B3, C2, D2, D3, D4, G1, H4, J2, J3 or J4;
 - (cc) in the top storey of any building where the floor of such top storey is a concrete slab and such building does not exceed 15 m in height and is of an occupancy classified B3, D3, D4, G1, J3 or J4;
 - (ii) timber construction complying with SABS 082 that has a fire resistance of not less than 30 minutes where the occupancy of the building is classified G1, H3 or H4: Provided that in the case of any such occupancy the timber construction shall not exceed two storeys in height.
- (g) Any perforated floor type or any mezzanine floor less than 100 m² in area shall not be considered to be a structural element or component.

TABLE 5 — STABILITY OF STRUCTURAL ELEMENTS OR COMPONENTS

1	2	3	4	5	6	7
Occupancy	Class of occupancy	Stability, minutes				
		Single storey building	Double storey building	3—10 storey building	11 storeys and over	Basement in any building
Entertainment and public assembly	A1	30	60	120	120	120
Theatrical and indoor sport	A2	30	60	120	120	120
Places of instruction	A3	30	30	90	120	120
Worship	A4	30	60	90	120	120
Outdoor sport	A5	30	30	60	90	120
High risk commercial service	B1	60	60	120	180	120
Moderate risk commercial service	B2	30	60	120	120	120
Low risk commercial service	B3	30	30	90	120	120
Exhibition hall	C1	60	90	120	120	120
Museum	C2	30	60	90	120	120
High risk industrial	D1	60	90	120	180	240
Moderate risk industrial	D2	30	60	90	120	180
Low risk industrial	D3	30	30	60	120	120
Plant room	D4	30	30	60	90	120
Places of detention	E1	60	60	90	120	120
Hospital	E2	60	90	120	180	120
Other institutional (residential)	E3	60	60	120	180	120
Large shop	F1	60	90	120	180	120
Small shop	F2	30	60	120	180	120
Wholesalers' store	F3	60	90	120	120	120
Offices	G1	30	30	60	120	120
Hotel	H1	30	60	90	120	120
Dormitory	H2	30	30	60	120	120
Domestic residence	H3	30	30	60	120	120
Detached dwelling house	H4	30	30	60	NA	120
High risk storage	J1	60	90	120	180	240
Moderate risk storage	J2	30	60	90	120	180
Low risk storage	J3	30	30	90	90	120
Parking garage	J4	30	30	60	90	120

NOTE

NA = Not applicable.

Commentary: The use of unprotected steel in the structural system of all single storey and certain double storey buildings is permitted in spite of the fact that in many cases such structural members would not comply with the requirements of Table 5. The practice is regarded as safe for all practical cases that are likely to occur in single storey construction but the possible consequences of early distortion or collapse should be considered in the design of two storey buildings in order to be certain that escape routes will be able to serve the purpose for the required period. Particular care needs to be exercised where thin sections are used or in "space-frame" type structures.

A further problem arises in the application of rule TT2. Distortion or collapse of any structural member must not cause loss of integrity or stability in any external wall facing a site boundary or another building as this might lead to non-compliance with the safety distance requirement. Where such a situation occurs it would be necessary either to protect

the steel to the extent required to attain the stability given in Table 5 or to regard such wall as being of Type N for the purposes of rule TT2.

TT8 TENANCY SEPARATING ELEMENTS

Any separating element between tenancies where the occupancy is classified H1, H2 or H3 shall have a fire resistance of not less than 30 minutes.

TT9 PARTITION WALLS AND PARTITIONS

TT9.1 Any partition wall in any occupancy classified E1, E2 or E3 shall have a fire resistance of not less than 60 minutes and any such wall in any occupancy classified G1, H2, H3 or H4 shall have a fire resistance of not less than 20 minutes.

TT9.2 In any building classified H3 or H4 —

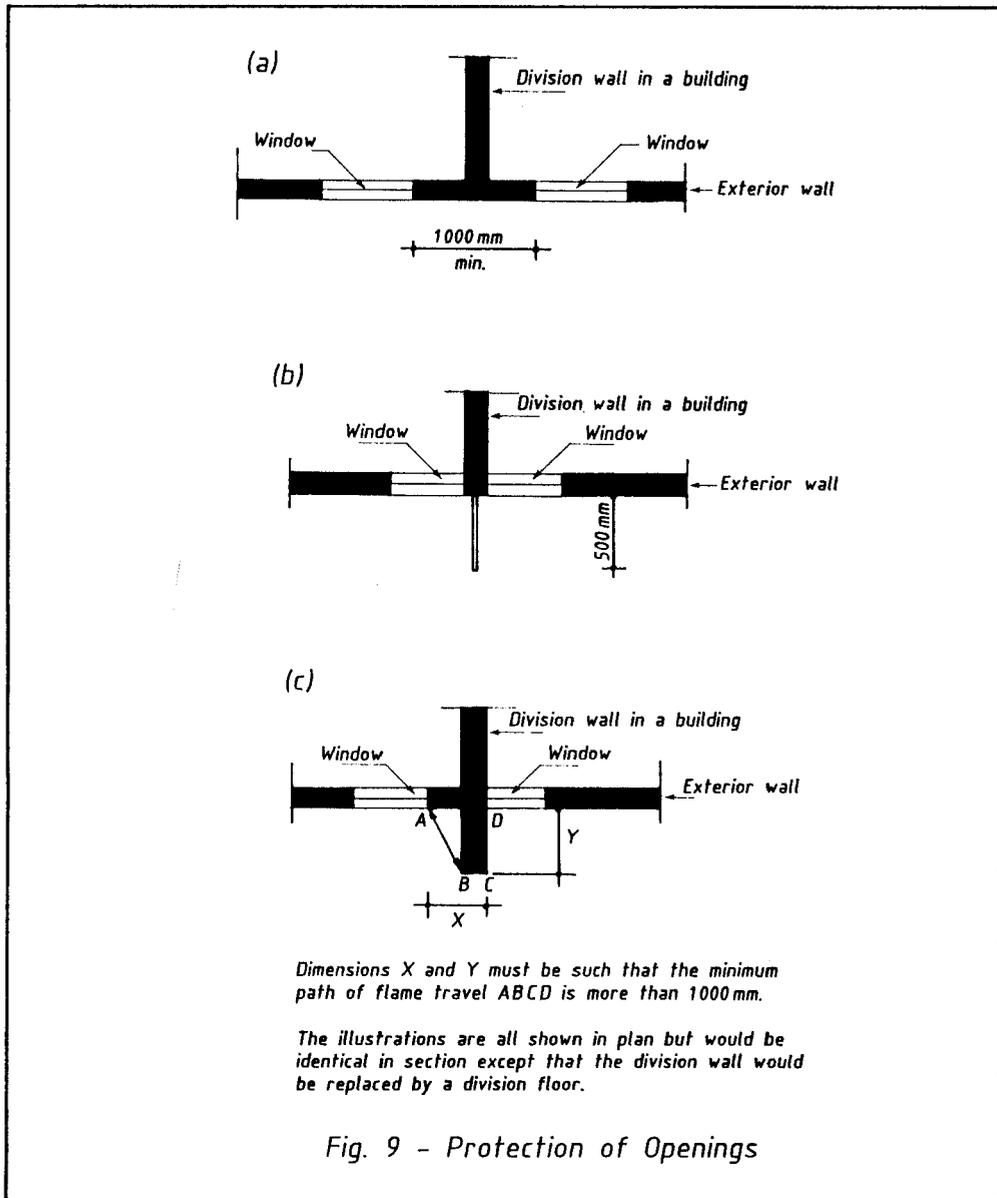
- (a) any wall between any garage and any habitable room shall have the same fire resistance as that specified for the internal walls of such building;
- (b) any door between such garage and such room shall be a solid timber or solid timber core door not less than 40 mm in thickness; and
- (c) any roof space shall be divided by the vertical extension of such wall to the underside of the roof covering.

TT9.3 Any partition walls or partitions erected on any storey above the third storey of any building shall be non-combustible or shall not contribute a fire load of more than 5 kg/m² of floor area in a division.

TT10 PROTECTION OF OPENINGS

TT10.1 Where an opening in any external wall of any division is less than 1 m measured horizontally or vertically from an opening in another division, a 500 mm projection from such wall shall be constructed between such openings and such projection shall have a fire resistance of not less than half that required for the element separating the divisions concerned: Provided that any other equivalent means of fire protection which ensures that the flame travel path from one opening to another is not less than 1 m shall be permitted.

Commentary: Figure 9(a) and (b) illustrate the requirements of subrule TT10.1 and Figure 9(c) represents a possible alternative arrangement. In the examples shown, any flame travelling from one window to the other would have to travel along some path whose shortest length would be at least 1 m. The windows are shown in plan but similar forms of construction could be used in the vertical plane.



- TT10.2** Where there is an opening in any wall required to have a fire resistance of 60 minutes or more such opening shall be provided with a fire door or fire shutter of the class given in column 3 of Table 6: Provided that this requirement shall not apply —
- (a) to any opening for the entrance to a lift;
 - (b) where such opening, not being an opening contemplated in subrule **TT27.2**, gives access to a safe area outside the building; or
 - (c) in the case of any service shaft that is fire stopped at every floor level.

TABLE 6 — CLASSES OF FIRE DOORS OR FIRE SHUTTERS

1.	2	3
Type of wall	Required minimum fire resistance of wall, minutes	Class of fire door or fire shutter
Occupancy separation	60	A
	120	B
Divisional separation	60	A
	120	D (or two C doors with approval)
Emergency route	120	B

- TT10.3** Any fire door or fire shutter shall satisfy the requirements contained in SABS 1253.
- TT10.4** Any fire door or fire shutter shall be fitted with an approved self-closing or automatic closing device.
- TT10.5** Any fire door which is required to have a specific fire resistance may be replaced by two separate fire doors which shall be positioned apart not less than 1,5 times the width of any leaf of such door: Provided that the sum of the fire resistances of such separate doors shall not be less than the fire resistance required for the first-mentioned door.
- TT10.6** Any hinged fire doors installed in terms of subrule **TT10.5** shall open in the same direction and be hinged on the same side.

TT11 RAISED ACCESS AND SUSPENDED FLOORS OF COMBUSTIBLE MATERIAL

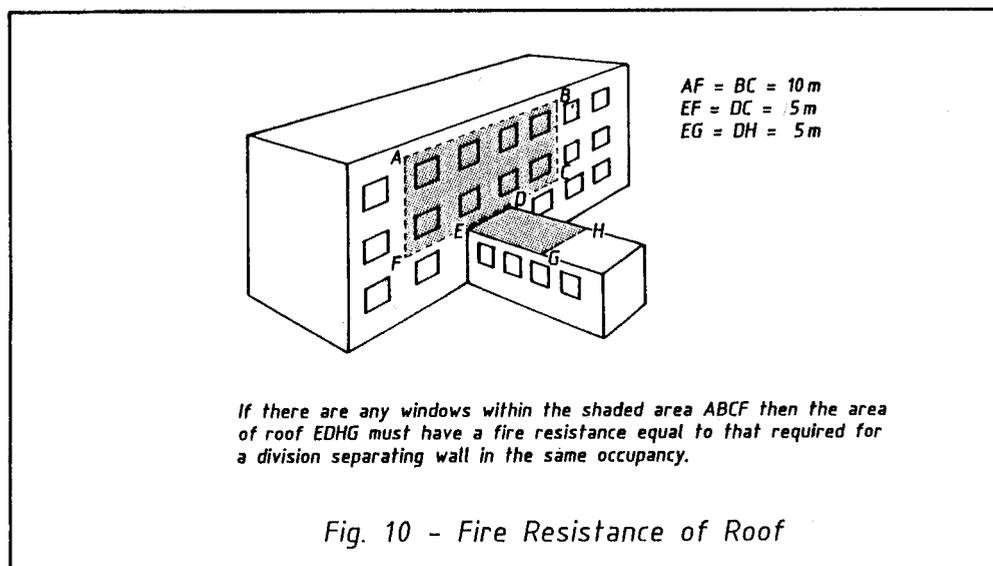
TT11.1 Except in the case of any building classified H3 or G1 which does not exceed 2 storeys in height or in the case of any building classified H4, no suspended floor, not being a mezzanine floor, shall be permitted to be of combustible material unless such floor has ground directly below it or is not more than 50 mm above a non-combustible slab: Provided that where the elements used for the construction of an access floor have been favourably evaluated for such use by the Council of the South African Bureau Standards or the CSIR, such access floor shall be permitted.

- TT11.2**
- (a) The void under an access floor shall not be connected to any space in another division unless such connecting opening is protected with a fire door, fire shutter or fire damper having the same fire resistance as the division separating element.
 - (b) Any void below a raised access floor shall be divided by fire stops into areas of not more than 300 m² or shall be protected by a fixed automatic fire-fighting system.
 - (c) Any such void used as an artificial ventilation plenum shall comply with the requirements contained in subrule **TT43.5**.

TT12 ROOF ASSEMBLIES AND COVERINGS**TT12.1**

Where a roof of any part of a building meets any wall of a higher part of such building and such wall has any openings in any position within 10 m above and 5 m to either side of such roof, such roof shall, for a distance of not less than 5 m from such wall, have the fire resistance required for a division separating wall for the occupancy in question.

Commentary: Figure 10 illustrates the principle of the protection required by subrule TT12.1.



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TT12.2

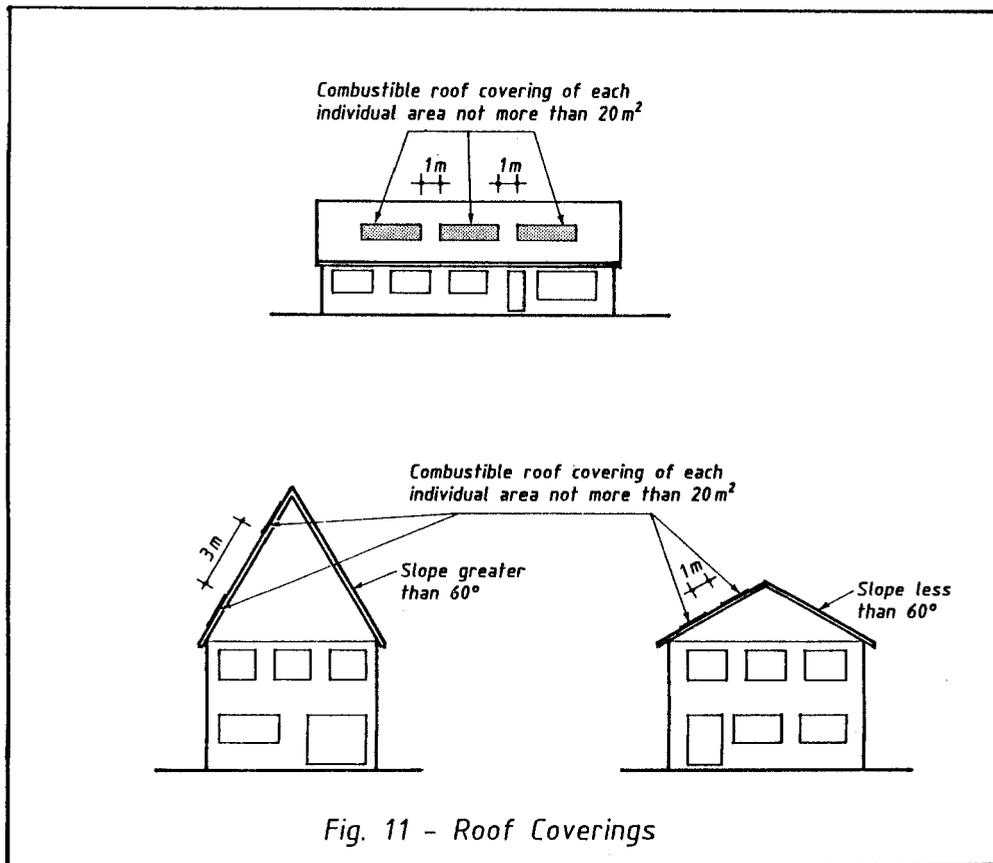
Where any combustible roof covering material including thatch, shingles and bitumenized felt on boarding is used and the plan area of such roof is more than 20 m², the distance between the building so covered and any boundary of the site on which such building is situated shall be not less than 4,5 m.

TT12.3

Where any roof covering includes individual small areas of combustible material, the total area of which is not more than 5% of the roof area, and where —

- (a) no such individual area is more than 20 m² such roof covering shall not be considered a combustible roof covering: Provided that —
 - (i) where the slope of the roof does not exceed 60° there shall be a minimum distance of 1 m between any two such areas;
 - (ii) where the slope of the roof is in excess of 60° there shall be a minimum distance of 1 m measured horizontally and 3 m measured along the slope of such roof between any two such areas.
- (b) any such individual area in a roof over any shopping mall exceeds 20 m², and may constitute an element of danger to the public, such material shall be permitted only where it is the subject of a favourable assessment from the Council of the South African Bureau of Standards or the CSIR.

Commentary: Figure 11 illustrates the application of subrule TT12.3.



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TT12.4 Any combustible waterproof membrane in contact with a concrete slab shall, for the purposes of this rule, be considered non-combustible.

- TT12.5**
- (a) Where roof space is formed between any ceiling and any roof covering, such space shall be divided by means of non-combustible fire-stops into areas of not more than 300 m² and the distance between such fire-stops shall be not more than 30 m: Provided that this requirement shall not apply where such roof space and the room below are protected by a fixed automatic fire-fighting system.
 - (b) Any such roof space used as an air-conditioning or artificial ventilation system plenum shall comply with the requirements contained in subrule TT43.5.
 - (c) In the case of any occupancy classified H3 the walls separating dwelling units shall be extended and any such extension shall —
 - (i) have the same fire resistance as the wall supporting it;
 - (ii) be taken to the underside of any non-combustible roof or roof covering or any concrete slab below a combustible roof covering, as the case may be; and
 - (iii) be taken to not less than 300 mm above any combustible roof covering other than one laid on concrete.

- TT13** **CEILINGS**
- TT13.1** In any building not being a building classified H4, combustible material shall not be used for any suspended ceiling: Provided that —
- (a) solid timber;
 - (b) combustible material that has been favourably evaluated by the Council of the South African Bureau of Standards or the CSIR;
 - (c) air supply or return air intake grilles of combustible material where the sum of the area of all such grilles forms not more than 5 % of the total area of such ceiling and the overall area of any individual grille is not more than 0,09 m²,
- shall be permitted.
- TT13.2** Where in terms of the proviso to subrule **TT13.1** combustible material is used in any suspended ceiling in a building, the maximum area of any division in which such ceiling is situated shall be not more than one quarter of the relevant division area given in Table 3 for the occupancy classification in question: Provided that this requirement shall not apply where any such building is —
- (a) not more than three storeys in height; or
 - (b) provided with a fixed automatic fire-fighting system.
- T13.3** Where the space between any suspended ceiling and any structural floor above such ceiling is used as a plenum for any air-conditioning or artificial ventilation system such space shall be divided by non-combustible fire-stops into areas of not more than 300 m² and the distance between such fire-stops shall be not more than 30 m: Provided that this requirement shall not apply where such space and the room below are protected by a fixed automatic fire-fighting system.
- TT14** **FLOOR COVERINGS**
- TT14.1** Where any combustible material, not being a material contemplated in subrule **TT14.2** or **TT14.3**, is used as a floor covering in any building, the maximum area of any division in which such floor covering is used shall be not more than one quarter of the relevant division area given in Table 3 for the occupancy classification in question: Provided that this requirement shall not apply where any such building is —
- (a) not more than three storeys in height; or
 - (b) provided with a fixed automatic fire-fighting system.
- TT14.2** In any building any fitted carpet shall be permitted where such carpet is of a type of which a representative specimen, when tested in accordance with SABS 0177: Part IV, has a classification not inferior to that specified in Table 7 for the particular occupancy concerned: Provided that this requirement shall not apply in the case of a fitted carpet laid in any occupancy classified H4.
- TT14.3** In any building any cork, timber or any resilient floor covering shall be permitted where such covering is fully adhered to the substrate.

TABLE 7 — REQUIRED CLASSIFICATIONS FOR FITTED FLOOR COVERING

1	2	3		4		5	6
Class of occupancy	Basement of building of any height	Single and double storey buildings		Building exceeding two storeys		Building of any height	
	Any floor area except that contemplated in column 5 or 6					Feeder routes	Emergency routes
	USP or SP	USP	SP	USP	SP		
A1	2	3	3	3	3	2	1
A2	2	3	3	3	3	2	1
A3	2	3	3	3	3	2	1
A4	2	3	3	3	4	2	1
B1	2	3	4	3	4	3	1
B2	2	4	5	3	4	3	1
B3	3	4	5	4	5	3	1
C1	3	3	4	3	4	2	1
C2	3	3	4	3	4	2	1
D1	NC	NC	NC	NC	NC	NC	NC
D2	2	4	5	3	4	3	1
D3	2	4	5	4	5	3	1
D4	NC	NC	NC	NC	NC	NC	NC
E1	NC	3	3	3	3	2	1
E2	NC	3	3	3	3	2	1
E3	NC	3	3	3	3	1	1
F1	3	4	5	3	4	2	1
F2	3	4	5	3	4	2	1
F3	3	4	5	3	4	2	1
G1	3	4	5	4	5	3	1
H1	1	4	5	4	5	3	1
H2	1	4	5	2	4	3	1
H3	1	5	5	3	4	3	1
J1	NC	NC	NC	NC	NC	NC	NC
J2	NC	NC	3	NC	3	2	1
J3	2	3	4	2	3	2	1
J4	NC	NC	NC	NC	NC	NC	NC

NC = Non-combustible material only.
 SP = Protected by a sprinkler system.
 USP = Not protected by a sprinkler system.

NOTE: Table refers only to those areas actually used for the occupancies given.

Commentary: It must be realized that the use of a combustible material as a ceiling, a fitted floor covering or a wall finish may make a considerable contribution to the fire load in any building. Since it is neither reasonable nor practical to preclude the use of such materials it is essential to take into account both that they are combustible and that, in burning, they may help to spread a fire and may make a significant contribution to the quantity of heat, smoke and noxious fumes generated.

Where any combustible material is used for a ceiling or as a wall finish or where a non-classified combustible material is used as a fitted floor covering, it is considered that the

increase in fire load could be significant. Under these circumstances therefore, the maximum area permitted for a division of any building has been reduced although concessions have been made in the case of buildings of not more than three storeys in height and buildings that are sprinkler protected. However, it is always necessary, even within a division of reduced size, to control where and under what conditions combustible materials are used as the rate of burning will be different for each material, as will its contribution to heat and smoke.

Any material to be used for a floor covering or for a wall finish is tested in a standard manner and is classified on a scale of 1-5. In both cases the lower figures indicate better performance. These classifications are based on a "fire index" which in turn represents the effect of rate of burning and the amount of heat and smoke generated. It should be noted that in some cases the behaviour of a floor covering in a fire may be considerably influenced by the quality of the underfelt used and it is therefore recommended that where a carpet is intended to be used with an underfelt it should be tested together with the particular underfelt. At present no classification of underfelt, equivalent to that used for carpets, is available and it is thus not possible to give any deemed-to-satisfy requirements for the underfelt.

Control of the use of any combustible material as a fitted floor covering or as a wall finish is covered in Tables 7 and 8 respectively, and is based on the classification mentioned above. The class of material required in any given circumstances is related to the occupancy classification, building height, and the provision of a fixed fire-fighting system in the building concerned and is determined from these tables. It should be stressed that this procedure must be followed whether or not it has been found necessary, in terms of rule TT14 or rule TT15, to reduce the maximum area permitted within a division.

In the case of ceilings, most combustible materials are not permitted and there is thus no need for a similar classification.

TT15

WALL FINISHES

TT15.1

Where, in any building, any combustible material not being a material contemplated in the proviso to subrule TT15.2, is used as a finish on any wall the maximum area of the division in which such wall is situated shall be not more than one quarter of the relevant division area given in Table 3: Provided that this requirement shall not apply where such building is —

- (a) not more than three storeys in height; or**
- (b) provided with a fixed automatic fire-fighting system.**

TT15.2

Any combustible wall lining or decorative finish, except where used in any building classified H4, shall be of a type of which a representative specimen, when tested in accordance with SABS 0177: Part III, has a classification not inferior to that specified in Table 8 for the occupancy concerned: Provided that this requirement shall not apply where the thickness of such finish is less than 0,5 mm and such finish adheres fully to a non-combustible material.

TT15.3

The use of combustible material shall be permitted for any door leaf or for trim to any door frame or window frame or for any pelmet, chair rail, picture rail or skirting.

TABLE 8 — REQUIRED CLASSIFICATIONS FOR WALL FINISHES

1	2	3		4		5	6
Class of occupancy	Basement of building of any height	Single and double storey buildings		Building exceeding two storeys		Building of any height	
	Any wall area except that contemplated in column 5 or 6					Feeder routes	Emergency routes
	SP	USP	SP	USP	SP		
A1	1	3	3	3	3	2	1
A2	1	3	3	3	3	2	1
A3	1	3	3	3	3	2	1
A4	1	4	4	3	4	2	1
B1	2	3	4	3	4	3	1
B2	2	3	4	3	4	3	1
B3	3	4	5	4	5	3	1
C1	3	3	4	3	4	2	1
C2	3	3	4	3	4	2	1
D1	NC	NC	NC	NC	NC	NC	NC
D2	2	3	4	3	4	3	1
D3	2	4	5	4	5	3	1
D4	NC	NC	NC	NC	NC	NC	NC
E1	NC	2	2	2	2	2	1
E2	NC	2	2	2	2	2	1
E3	NC	2	2	2	2	2	1
F1	3	2	3	2	3	2	1
F2	3	2	3	2	3	2	1
F3	3	2	3	2	3	2	1
G1	3	4	5	4	5	3	1
H1	Not permitted	3	5	3	5	3	1
H2		3	4	2	4	3	1
H3		4	5	3	4	3	1
J1	NC	NC	NC	NC	NC	NC	NC
J2	NC	NC	3	NC	3	2	1
J3	2	3	4	2	3	2	1
J4	NC	NC	NC	NC	NC	NC	NC

NC = Non-combustible material only.
 SP = Protected by a sprinkler system.
 USP = Not protected by a sprinkler system.

NOTE: Table refers only to those areas actually used for the occupancies given.

TT16. PROVISION OF ESCAPE ROUTES

TT16.1 One or more escape routes shall be provided in any building.

TT16.2 Where the travel distance, measured to the nearest escape door, is not more than 45 m, any such escape route —

- (a) (i) in any single-storey building;
- (ii) in any dwelling unit having such escape door at ground level; or
- (iii) in and from any dwelling unit at first floor level where such dwelling unit is served by an individual stairway to ground level;

shall not be required to include any emergency route and, in the case of any dwelling unit contemplated in this subrule, such escape route shall not be required to comply with the requirements of rules **TT17** to **TT30** inclusive.

- (b) in any building of two or three storeys in height shall not be required to include any emergency route: Provided that where such building is —
 - (i) any building of two storeys in height where the population of the upper storey is more than 25 persons; or
 - (ii) any building of three storeys in height;
 such building shall be provided with not less than two such escape routes.
- (c) in any building of a height of more than three storeys shall be provided with not less than two such escape routes and —
 - (i) an emergency route shall form part of each such escape route;
 - (ii) any such emergency route shall include any stairway forming part of the escape route and also that part of the escape route from the lower end of the stairway to any escape door.

TT16.3 Where, in any building, the travel distance measured to the nearest escape door is more than 45 m, not less than two such escape routes shall be provided and an emergency route shall form part of each such escape route.

TT16.4 Where, in terms of subrule **TT16.2** or **TT16.3**, emergency routes are required in any building —

- (a) such emergency routes shall be entirely independent from one another and so situated that should any one of such routes become unusable or inaccessible not less than one other such route may reasonably be expected to remain accessible and usable;
- (b) the travel distance measured to the nearest access door shall be not more than 45 m;
- (c) the path of travel to any access door shall be along a feeder route;
- (d) any such feeder route shall lead in two different directions to two or more independent emergency routes;
- (e) the exist door from any room shall lead directly into a feeder route: Provided that —
 - (i) such exist door may lead into a dead-end corridor where the total distance to be travelled from the furthest point in such room to an access door or to a feeder route is not more than 15 m; or
 - (ii) such exist door may lead into any other room, where such other room is within the same tenancy and the exit door from such other room leads into a feeder route.

Commentary: *All buildings must be provided with one or more escape routes that can be used in case of fire or other emergencies. The two most important aspects are that the route should, at all points, be wide enough to allow the population using such route to move rapidly along it and it must not, at any time, be obstructed in any way.*

The width of any escape route within a dwelling house (occupancy H4) or within an individual dwelling unit in an occupancy H3 is not critical because of the small population involved and the fact that the layout of the dwelling unit can be assumed to be well-known to the occupants. In the case of any occupancy H3 where two or more dwelling units open on to a part of the escape route which serves all of them, such common part of the route must comply with all the requirements (including width) for escape routes.

The length of an escape route in an H3 occupancy may be controversial. The travel distance is of course always measured from the furthest point in any room in a dwelling unit to the nearest escape door or access door but it is important to note that there may be certain special circumstances that must be considered. In any dwelling unit at ground level, whether an H4 occupancy or part of an H3 occupancy, any "exit" door from the dwelling unit that leads to an approved open space may be regarded as an escape door and the travel distance measured accordingly. In the case of a dwelling unit at first floor level, such dwelling unit may be regarded as an independent unit where it is provided with its own individual stairway leading to ground level outside the building and does not share any part of an escape route with any other dwelling unit. However, because an escape door must, by definition, be at ground level the travel distance must be measured to an imaginary "escape door" at the foot of the stairway.

Where the travel distance, measured from the furthest point in any room to an escape door, is less than 45 m there are no requirements (other than dimensions) for any escape route and in many cases it will suffice to provide a single escape route. Where the travel distance is more than 45 m or in any building of more than three storeys in height it becomes necessary to provide emergency routes, and hence feeder routes, as part of the escape routes and in all cases it will be necessary to provide at least two escape routes.

To be fully effective, feeder routes and emergency routes should supply at least the degree of protection envisaged in the deemed-to-satisfy rules given in this part of the code. This is particularly important in the case of emergency routes which have to perform the dual function of protection during evacuation of the building and during subsequent fire-fighting operations.

The essence of any escape route that requires the incorporation of emergency routes is that there should be at least two possible directions of escape. Where the exit from any room leads into a dead-end corridor this is not possible and it becomes necessary to reduce to the absolute minimum the distance to be travelled before either a feeder route or an access door into an emergency route is reached. In this case, account must be taken of the travel distance both in the room in question and along the dead-end corridor. This is of consequence both in itself and as part of the total travel distance to a safe area.

In order to determine what provision is required for escape routes, proceed as follows:

(a) Check the travel distance from the furthest point in any room, measured along the escape route, to the nearest escape door. Where this distance is less than 45 m or in any building of not more than three storeys in height no emergency routes (and hence no feeder routes) are required. With the exception of those cases contemplated in subrule TT16.2(b), only one escape route need be provided but this must be dimensionally adequate for the population to be served.

(b) Where the travel distance, measured in terms of (a) above, is more than 45 m, emergency routes must form part of the two or more escape routes that must be provided and these emergency routes should be as far apart as possible subject to the limitation that the travel distance to the nearest access door to an emergency route must not be more than 45 m.

(c) Calculate the total population of each floor of the building. Note that in any occupancy classified H3, the population within any individual dwelling unit is not, in itself, of concern as the population figure required is used only in connection with the common part of the escape route and not that part which is provided within each such dwelling unit.

(d) Using the population figure calculated in terms of (c), calculate the number and width of the necessary escape routes bearing in mind that —

- (i) the widths of all routes should be approximately equal;
- (ii) because fire may prevent the use of a particular emergency route, one such route is always discounted in determining the widths required for the remaining emergency routes; and
- (iii) in the case of a stairway only the population of the most heavily populated storey need be taken into account in the calculation of width.

- TT19.4** The last component of any emergency route shall discharge at ground level directly to a street or public place or to an approved open air space leading to a street or public place.
- TT19.5** Subject to the requirements of subrule **TT19.6**, any access door or any other door, being a component of an emergency route shall be a hinged door which shall open in the direction of egress from the building.
- TT19.6** Any revolving or sliding door or automatically operated door or shutter may form part of an emergency route where such door or shutter is positioned at the end of such route discharging to a safe area: Provided that —
- (a) there shall be, adjacent to such door or shutter, an alternative hinged door which shall comply with all rules relating to hinged doors in emergency routes; or
 - (b) any such automatically operated sliding door or shutter shall be equipped with an approved fail-safe system and any such revolving door shall be of an approved collapsible type.
- TT19.7** No door giving access to an emergency route shall when opened obstruct the progress of persons using such route.
- TT19.8** Any door frame, and door leaf when in the open position, shall not protrude into the width of the emergency route by more than 100 mm on either side.
- TT19.9** Any locking devices fitted to any access door or escape door in any emergency route shall be of a type approved by the local authority.
- TT19.10** Any door fitted with a locking device as contemplated in subrule **TT19.9** shall be clearly indicated on the fire plan.
- TT20** **DIMENSIONS OF COMPONENTS OF ESCAPE ROUTES**
- TT20.1**
- (a) The width of any escape route within any room having a population of more than 25 persons shall be not less than 800 mm .
 - (b) The width of any part of an escape route or any component thereof between any exit door and the end of such route shall be not less than 1,1 m .
- TT20.2** The width of any escape route shall not decrease in the direction of emergency travel: Provided that in the case of a lobby, foyer or vestibule that is wider than required for such route the exit doors therefrom shall have a width not less than that required for such route.
- TT20.3** The travel distance shall be measured along the centre line of the shortest natural unobstructed path of travel within a room and along any escape route and where such route is via a ramp or staircase the measurement shall be along the plan centre line of such ramp or staircase.
- TT20.4** Any escape route shall be provided throughout its length with a clear vertical headroom of 2 m and in any lobby, foyer or vestibule the minimum room height shall be not less than 2,4 m .

TT21.**WIDTH OF ESCAPE ROUTES****TT21.1**

- (a) The population of any room or storey or portion thereof shall be the actual number of persons in such room, storey or portion thereof during normal use or shall be calculated from the criteria given in regulation A21.
- (b) Where more than one escape route discharges to a common component the width of such common component and any following components situated along the direction of egress shall be calculated by taking into account the population discharging into such common component: Provided that in the case of any stairway, only the population of the most heavily populated storey served thereby shall be deemed to discharge into such stairway.

TT21.2

In any building the width of any escape route to be provided in respect of any room, storey or portion thereof shall be not less than that given in Table 9 for the population concerned: Provided that —

- (a) no individual escape route shall be designed for a population of more than 190 persons;
- (b) where there are two or more emergency routes one such route shall be discounted in determining the widths required for the remainder.

TABLE 9 — WIDTH OF ESCAPE ROUTES

1	2
Maximum number of persons	Minimum width, mm
120	1 100
130	1 200
140	1 300
150	1 400
160	1 500
170	1 600
180	1 700
190	1 800

TT21.3

The aggregate width of escape routes shall be so distributed that the minimum widths of individual routes serving any room, storey or portion thereof shall be as nearly equal to each other as is practicable.

Commentary: *The rules given for the siting and dimensioning of escape routes apply essentially to individual occupancies in a building. Where there are unusual circumstances such as may arise in shopping malls and sports stadia the same general principles will apply but much of the detail may have to be adapted to suit the particular situation.*

In any design for fire protection measures in a shopping mall, for instance, population calculations in accordance with these rules can only be based on the population calculated for individual shops. The total figure arrived at in this way will bear little relation to reality and must be modified by some "diversity factor" to allow for the number of shops. A further allowance will have to be made for the degree of compartmentation, if any, in the mall and the proportion of the population likely to be inside shops at any given time.

It is not unusual for the larger shops in a shopping mall to have escape routes independent of those provided for the remainder of the mall. In the case of the smaller shops, service corridors may double as escape routes but the main promenade in the mall will

inevitably also be used for escape purposes although it could never satisfy the requirements for an emergency route. On the credit side, however, is the fact that in many cases the mall is wide and the fire load in any individual small shop will not be very large. Where adequate fire protection measures have been installed it may be possible to confine any fire to the shop in which it originated.

The number of factors involved is thus very large and is further influenced by the presence, or lack, of adequate smoke control measures and fixed means of automatic fire-extinguishment such as a suitable sprinkler system. In such cases it is essential to consider from first principles the means of escape and to ensure that it is possible to evacuate the mall in the shortest possible time, preferably in a fully protected environment.

Large grandstands in sports stadia suffer from all the usual problems associated with large crowds but, in addition, may present difficulties which are unique to this type of structure. In a panic situation people may climb over the rows of seats and escape routes are often not as clearly defined as they would be within a building. The resultant lack of orderly flow may lead to choking of access doors to emergency routes or of exits from the stand. However, it would rarely be the case that simultaneous evacuation from all parts of the stadium would be necessary and it may be possible to consider alternative means of escape such as allowing movement of part of the population to other stands or onto the playing field in the first instance. As in the case of shopping malls it is impossible to lay down rigid rules for the provision of escape routes and all possibilities should be taken into account in order to ensure the safety of those using any grandstand.

TT22**BASEMENTS**

In any building not classified as D4 or H4 any storey below the ground storey shall be served by not fewer than two separate emergency route stairways: Provided that where such storey is used for the parking of motor vehicles one such emergency route stairway may be replaced by a motor vehicle ramp.

TT23**STAIRWAYS AND OTHER CHANGES OF LEVEL ALONG ESCAPE ROUTES****TT23.1**

The storeys of any duplex dwelling unit may be served by a single stairway within such dwelling unit: Provided that such dwelling unit shall have access to an escape route as required by these rules.

TT23.2

At any storey level the entrance to any stairway forming part of an emergency route shall be not closer than 5 m to the entrance to any other such stairway.

TT23.3

Any stairway forming part of an emergency route shall discharge into a corridor or foyer forming part of such emergency route or into a street, public place or approved open space.

TT23.4

Any stairway forming part of an emergency route from any storey above ground level shall not have direct access to any basement.

TT23.5

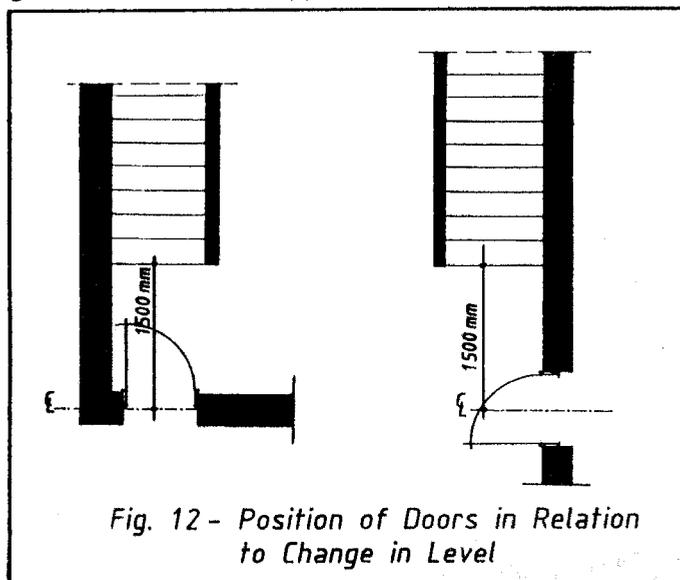
No escalator shall form a component of any emergency route.

TT23.6

Where any stairway forms part of an emergency route such stairway shall, throughout its length, be provided with a handrail on each side.

- TT23.7** Notwithstanding the requirements for minimum width contained in subrule **MM2.1**, the width of any stairway forming part of an emergency route shall be not less than that given in Table 9 for the population concerned and such width shall be not more than 1,8 m; Provided that any handrail may project into such width by an amount of not more than 100 mm .
- TT23.8** The distance between any change in floor level and the centre line of a doorway in an emergency route or between two changes of floor level in such route shall be not less than 1,5 m .

Commentary: Figure 12 illustrates the application of subrule TT23.8



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- TT23.9** No curved or winding stairs shall form part of any emergency route.
- TT23.10** The rise and tread of any step forming part of an emergency route shall comply with the requirements contained in subrules **MM2.3** and **MM2.4**, and in addition such step shall have solid treads and risers; Provided that in the case of any occupancy classified D4 or in the case of any external stairway contemplated in rule TT27 such risers may be omitted.
- TT23.11** Any change in the level of the floor of any emergency route other than by a stairway between storeys shall be effected by means of a ramp or steps: Provided that —
- (a) no such ramp shall have a slope exceeding 1 in 8; and
 - (b) in the case of steps, not fewer than three steps shall be provided.
- TT24** **VENTILATION OF STAIRWAYS IN AN EMERGENCY ROUTE**
- Any enclosed stairway which is a component of any emergency route in any building not exceeding 30 m in height and where such stairway is not pressurized, shall be —
- (a) provided with a window or other opening not less than 1 m² in area for ventilation to the outside of the building at each storey level; or
 - (b) ventilated by means of a roof ventilator having an effective area of not less than 25 % of the plan area of the stairwell and such ventilator shall be permanently open.

TT25 PRESSURIZATION OF STAIRWAYS IN AN EMERGENCY ROUTE

- TT25.1** (a) Any enclosed stairway which is a component of an emergency route in any building exceeding a height of 30 m or having a basement more than 10 m in depth shall be provided with an approved pressurization system which shall be capable of pressurizing the stairway to not less than 25 Pa with any three doors open and not more than 50 Pa with all doors closed and shall either run continuously or come into operation automatically in the event of a fire in such building: Provided that in the case of any building used exclusively for an occupancy classified H3 it shall not be required to be so pressurized except where such building exceeds a height of 50 m .
- (b) Where any pressurization system is installed in any building of a height less than that given in paragraph (a) such system shall be capable of pressurizing such stairway to within the range given in paragraph (a).

TT25.2 Air for such pressurization shall not be drawn from the inside of the building.

TT25.3 Any pressurization system shall be provided with an approved emergency power supply system independent of the normal mains supply, which shall be capable of operating safely for a minimum period of two hours after the activation of such pressurization system.

TT26 OPENINGS IN FLOORS

TT26.1 In any building, not being a building classified H4, any opening, including an opening occupied by a stairway or escalator not forming part of an escape route, shall not connect more than —

- (a) two storeys if such building is not protected by a sprinkler system; or
 (b) four storeys if such building is protected by a sprinkler system.

TT26.2 At any landing of such stairway or escalator system a sign shall be displayed indicating the direction to at least one of the escape routes.

TT27 EXTERNAL STAIRWAYS AND PASSAGES

TT27.1 No external stairway shall be permitted to be a component of any emergency route of any building which exceeds 18 m in height unless such stairway is, subject to the requirements contained in rule TT24, partially enclosed through its length.

Commentary: *In any high building, people using a completely open external staircase will feel insecure and some may experience vertigo. This could lead to panic and disrupt evacuation of such building in case of fire or other emergency. It is therefore regarded as essential that any external staircase to a building more than 18 m in height be provided with some form of enclosing walls or screens, particularly where these will provide some visual barrier at the ends of each flight of stairs and at any landing outside an access door. The height and extent of such walls or screens will depend upon the dimensions and layout of the stairs, the sight-line in each case and the degree to which it may be desired to provide additional protection against wind, rain, etc.*

- TT27.2** No window, door or other unprotected opening in any facade of a building shall be closer than 3 m to any access door or any open stairway forming part of an escape route unless such opening is protected by a door or fire shutter having a stability rating of 30 minutes when tested in accordance with SABS 1253: Provided that —
- (a) this requirement shall not apply to any window not exceeding 0,3 m² in area, serving any room containing a WC pan or any bathroom, cloakroom or kitchen;
 - (b) any solid timber door of not less than 40 mm in thickness shall be deemed to comply with the requirement for a stability rating of 30 minutes.
- TT28** **LOBBIES, FOYERS AND VESTIBULES**
- TT28.1** Where any lobby, foyer or vestibule (hereinafter referred to as a “lobby”) is a component of one or more escape routes such lobby shall have the combined width of all escape routes discharging into it or be 33 % wider than the width calculated on the basis of the population which is to pass through it, whichever is the greater.
- TT28.2** Any display in such a lobby shall only be by means of a fixed board or fixed display case which shall not protrude more than 150 mm into such lobby and no other object shall be permitted to be placed in such lobby.
- TT28.3** Any glass used for such display case shall be safety glass.
- TT28.4** No trading or business activity shall be carried on in such lobby except from a fixed area prescribed by the local authority.
- TT29** **MARKINGS AND SIGNPOSTING**
- TT29.1**
- (a) Any building having emergency routes shall be clearly marked and signposted to indicate the direction to be travelled in the case of any emergency, and the size and positioning of the required marks and signs shall be subject to any directive issued by the local authority.
 - (b) The exit door of any room which has a population of less than 25 persons shall not be required to be so marked.
 - (c) Where any room has more than one exit door, any such door used for normal egress from such room shall not be required to be so marked.
- TT29.2** Any mark or sign contemplated in this rule shall comply with the requirements contained in SABS 1186: Provided that in the case of any auditorium or hall a sign reading “EXIT/UITGANG” shall be displayed over any exit doors of such auditorium or hall, and such sign shall have letters not less than 150 mm in height.
- TT29.3**
- (a) When any building is occupied any mark or sign contemplated in subrule **TT29.1(a)** shall be illuminated to an intensity of not less than 50 lux.
 - (b) In the case of occupancies classified A2, E1, E2, E3 or in any building normally occupied during the hours of darkness and having a population exceeding 100 persons, such marks or signs shall in the event of the failure of the normal mains supply be so illuminated for not less than 120 minutes.
 - (c) The emergency power supply to the lighting of such marks or signs shall be protected against the effects of fire for a period of not less than 120 minutes.
- TT29.4** The local authority may, where deemed necessary for the safety of occupants, require the provision of signs prohibiting exit.

Commentary: *The signs contained in SABS 1186 indicate direction of travel and thus have certain limitations in regard to where they, logically, can be used. In any escape route the "running man" sign is satisfactory when used on the walls of the corridor but may be misleading when used on a surface at 90 ° to the escape route. Where for information purposes it is essential to use the sign in this way it is suggested that such sign should be closely followed by confirmatory signs placed on the walls in the direction of travel and in positions where they can be easily seen in conjunction with the original sign. In the opposite case, where it is desired to indicate a change in the direction of travel, the sign must be placed across rather than along the direction of travel. Where such a sign is used to indicate the access door to an emergency route it is suggested that the confirmatory signs take the form of two of the "running man" symbols facing each other and placed on the access door.*

TT30 LIGHTING OF FEEDER AND EMERGENCY ROUTES

TT30.1 Any emergency route shall be provided with artificial lighting and at any time when the building containing such route is occupied there shall be a minimum illuminance of 50 lux on a horizontal plane 100 mm above the floor.

TT30.2 In any building having a population of more than 100 persons an adequate number of emergency light sources shall be installed in such emergency route and such light sources shall be connected to an approved emergency power supply which is —

- (a) independent of the mains supply; and
- (b) capable, in the event of any failure of the lighting contemplated in subrule **TT30.1**, of providing power supply to such emergency light sources for not less than 60 minutes.

TT30.3 Such emergency light sources shall be so located that —

- (a) the horizontal illuminance at any point on the centre line of such emergency route is not less than 0,3 lux; and
- (b) a uniformity ratio of not more than 40:1 is obtained along such emergency route.

TT30.4 Any feeder route in any basement or in any building classified A1, A2, A3, A4, C1, C2, E2, E3, F1 or F3, shall be provided with emergency lighting as contemplated in subrule **TT30.2**: Provided that in any occupancy classified A3 having a population of less than 50 persons, such feeder route shall not be required to be provided with such lighting.

TT31 FIRE DETECTION AND ALARM SYSTEMS

TT31.1 Any building containing an occupancy classified —

- (a) E2 or E3, irrespective of height or floor area;
- (b) F1, with a floor area of more than 500 m²; or
- (c) H1 or H2, with a height of more than 8 m;

shall be equipped with a fire detection system and an emergency evacuation communication system complying with SABS 0139.

TT31.2 All occupied areas within any building which exceeds 30 m in height or contains any storey exceeding 5 000 m² in floor area, other than a building contemplated in subrule **TT31.1**, shall be equipped with a fire detection and manually activated fire alarm system and an emergency evacuation communication system complying with SABS 0139.

TT31.3 Any building classified A1, A2, C1, C2 or F1 shall have a manually activated audible alarm system in accordance with SABS 0139.

- TT32** **PROVISION OF FIRE-FIGHTING EQUIPMENT**
- TT32.1** Any fire-fighting equipment in any building shall be so installed as to be ready at all times for its purpose.
- TT32.2** The disposition of such fire-fighting equipment shall be clearly visible or shall be indicated by symbolic signs which shall comply with the requirements contained in SABS 1186.
- TT32.3** The owner of any building shall keep available for inspection by the local authority a record of the maintenance of fire-fighting and protection equipment.
- TT33** **WATER RETICULATION FOR FIRE-FIGHTING PURPOSES**
- TT33.1** Any rational design of a fire installation shall make provision for water to be supplied in the quantity and at the pressure and rate of flow required by subrule **WW5.1**.
- TT33.2** Where such fire installation is not the subject of a rational design it shall comply with the requirements contained in rule **WW5**.
- TT34** **HOSE REELS**
- TT34.1** Hose reels for the purposes of fire fighting shall be installed in any building of two or more storeys in height or in any single-storey building of more than 250 m² in floor area at a rate of 1 hose reel for every 500 m² or part thereof of floor area of any storey: Provided that such hose reels shall not be required in any building classified H4 or in any dwelling unit in an occupancy classified H3 where such unit is provided with independent access to ground level.
- TT34.2** Any hose reel installed in such building shall comply with the requirements contained in SABS 543.
- TT34.3** Any hose reel so installed shall be positioned to ensure that the end of the hose will reach any point in the area to be protected.
- TT34.4** Any hose reel installed in any building shall —
- (a) bear, in a prominent position on the reel disc facing the user, the mark of standardization relative to the requirements contained in SABS 543, as contemplated in section 14 of the Standards Act, 1982 (Act 30 of 1982); or
 - (b) where it cannot so bear such mark, be clearly marked by the South African Bureau of Standards to indicate that it has been evaluated by and is acceptable to the South African Bureau of Standards.
- TT34.5** Where a satisfactory water supply and pressure are not available, two fire extinguishers complying with the requirements contained in rule **TT37** shall be provided in place of each required hose reel.
- TT35** **HYDRANTS**
- TT35.1** Hydrants in positions subject to direction by the local authority shall be provided in —
- (a) any building exceeding 12 m in height; and
 - (b) any occupancy classified B1, B2, C1, C2, D1, D2, E1, E2, E3, F1, F3, H1, J1, J2, J3 or J4 of any height and of a total floor area exceeding 1 000 m².

TT35.2 Any hydrants required in terms of subrule **TT35.1** shall be provided at the rate of not less than one per 1 000 m² or part thereof of total floor area and not less than one per storey of such building or occupancy, as the case may be, and shall be distributed in such a manner that the fire hose contemplated in subrule **TT35.3** will reach to every part of the relevant area.

TT35.3

- (a) Any hydrant shall, where required by the local authority, be provided with a length of appropriate fire hose 24 m or 30 m in length together with couplings and a 16 mm internal diameter nozzle, all of which shall comply with the requirements contained in SABS 1128: Part II.
- (b) Such hose and nozzle shall when positioned in the open air or in any factory building be suitably housed in a cupboard: Provided that this requirement shall not apply in any occupancy classified J4.

TT35.4 In any permanent amusement park or exhibition ground, shopping centre or group housing, cluster housing, or town house complex there shall be installed ground or raised hydrants so placed that no point in such amusement park or exhibition ground or shopping centre or in any building in such housing complex shall be at a greater distance than 90 m from any hydrant.

TT35.5 Any hydrant required in terms of this rule shall comply with the requirements contained in SABS 1128: Part I.

TT36 **SPRINKLER SYSTEMS**

TT36.1

- (a) In addition to the requirements contained in rule **TT4** and subrule **TT26.1(b)** an approved sprinkler system shall be installed —
 - (i) in any building exceeding 30 m in height except where such building is exclusively of an occupancy classified G1 where the division size is not greater than 500 m², or of an occupancy classified H3;
 - (ii) in any basement storey which exceeds 500 m² in floor area and such storey is not naturally ventilated; and
 - (iii) in any other storey which exceeds 500 m² in total floor area and such storey is not provided with breakable or openable panels as contemplated in subrule **TT42.1**, suitable for smoke ventilation.
- (b) Any other approved fixed means of automatic fire extinguishment may be substituted for an approved system required in terms of these rules.
- (c) In the case of any strong room, record room or security vault such a system need not be provided.

TT36.2 Any concealed space, not being a roof space contemplated in subrule **TT12.5**, which has a clear height exceeding 800 mm and a total area of compartment of more than 100 m² above any ceiling or a total area of compartment of more than 300 m² below any raised floor shall be equipped with a sprinkler system.

TT36.3 Any sprinkler system shall be fitted with a twin coupling for the attachment of a fire-pump: Provided that —

- (a) such coupling shall be painted lime yellow;
- (b) the pressure exerted by such pump shall be not more than 1 000 kPa; and
- (c) such pressure limitation shall be clearly marked on such coupling.

TT37 **PORTABLE FIRE EXTINGUISHERS**

TT37.1 Any building containing an occupancy given in Table 10 shall, for the relevant occupancy and floor area, be provided with portable fire extinguishers, as prescribed in such table, in approved positions.

TT37.2 Any local authority may specify the type of portable fire extinguisher to be provided and may require that a number of fire extinguishers shall be installed in excess of the number indicated in Table 10 if in its opinion any particular hazards or risks warrant such increase.

TT37.3 Any approved portable fire extinguisher installed in a building shall comply with the requirements contained in SABS 810, SABS 889 or SABS 1151, as the case may be, and shall be installed, maintained and serviced in accordance with SABS 0105.

TT37.4 Such portable fire extinguisher shall bear the mark of standardization as contemplated in section 14 of the Standards Act, 1982 (Act 30 of 1982) or where it cannot so bear such mark be clearly marked by the South African Bureau of Standards to indicate that it has been evaluated by and is acceptable to the South African Bureau of Standards.

TABLE 10 — PROVISION OF PORTABLE EXTINGUISHERS

1	2
Classification of occupancies	Number of portable fire extinguishers relative to floor area
B1, D1, D2 J1, J2, J3	1 per 100 m ²
A1, A2, A3, B2, C1, C2, D3, E1, E2, E3, F1, F2, F3, G1, H1, H2	1 per 200 m ²
A4, A5, B3, D4, H3, J4	1 per 400 m ²

TT37.5 The type of fire extinguisher shall, for the occupancy in which it is installed, have a capacity or mass rating as follows:

- (a) For an occupancy classified A1, A2, A3, A4, A5, E1, E2, E3, F1, F2, F3, G1, H1, H2 or H3:
- | | |
|----------------------------------|--------|
| (i) Water type | 9 ℓ |
| (ii) Foam type | 9 ℓ |
| (iii) Carbon dioxide type | 4,5 kg |
| (iv) Dry chemical type | 4,5 kg |
| (v) Halogenated hydrocarbon type | 2,5 kg |
- (b) For an occupancy classified B1, B2, B3, C1, C2, D1, D2, D3, D4, J1, J2, J3 or J4:
- | | |
|----------------------------------|------|
| (i) Water type | 9 ℓ |
| (ii) Foam type | 9 ℓ |
| (iii) Carbon dioxide type | 9 kg |
| (iv) Dry chemical type | 9 kg |
| (v) Halogenated hydrocarbon type | 5 kg |

TT38 MOBILE FIRE EXTINGUISHERS

TT38.1 Any fire extinguisher exceeding the capacities prescribed in the relevant specification SABS 810, SABS 889 or SABS 1151 and fitted with suitable wheels for transportation shall be deemed to be a mobile fire extinguisher.

TT38.2 An approved mobile fire extinguisher may replace half the portable fire extinguishers: Provided that —

- (a) the capacity of any such mobile fire extinguisher shall be at least equal to the combined capacity of the number of portable fire extinguishers it replaces;
- (b) it contains the same extinguishing medium as required for such portable extinguishers;

- (c) it replaces such portable extinguishers only on the floor and within the division concerned;
- (d) the floor area to be served by it does not exceed 500 % of that given in Table 10 or 1 000 m², whichever is the lesser;
- (e) the extinguishing medium complies with the appropriate requirements of SABS 810, SABS 889 or SABS 1151, as the case may be; and
- (f) such mobile fire extinguisher is kept in a readily accessible position.

TT39

FIRE STOPPING OF INACCESSIBLE CONCEALED SPACES

Where in any building there is any inaccessible concealed space with a maximum dimension of more than 5 m such space shall —

- (a) be fire stopped whether it contains combustible material or not;
- (b) where it is within any non-combustible building element, be fire stopped not less than every 5 m measured horizontally or vertically: Provided that this requirement shall not apply to the cavity of any masonry cavity wall;
- (c) where it is within any combustible building element, be fire stopped not less than every 3 m measured in both directions.

Commentary: An inaccessible concealed space could be any space in a building to which there is no ready access. It could, for instance, include the space above a false ceiling or under a false floor or that behind panelling fixed to a wall. Since, by definition, the space is concealed, any fire starting in such space or reaching such space from elsewhere could spread rapidly without anyone being aware of it before it is fully developed. It is for this reason that it is important that firestops should be provided at regular intervals in both the vertical and horizontal directions to prevent such spread.

TT40

PROTECTION IN SERVICE SHAFTS

TT40.1

The walls of any internal service shaft shall have a fire resistance of not less than the requirements for structural stability given in Table 5, subject to a maximum requirement of 120 minutes.

TT40.2

Where any vertical service shaft is provided in any building and such shaft does not contain any combustible material it shall be fire stopped at the level of every fifth storey above the bottom of such shaft.

TT40.3

Where such a shaft is so provided and it contains any combustible material it shall be fire stopped at the level of every storey above the bottom of such shaft.

TT40.4

Where any vertical service shaft is used for ventilation or it contains non-combustible plumbing or drainage services or is a non-combustible rubbish chute no fire stop shall be required within such shaft.

TT40.5

Where any horizontal service shaft passes through any separating element and such element is required to have a fire resistance, such shaft shall be fire stopped where it passes through such element.

TT40.6

Where any service penetrates a separating element such separating element shall be completely sealed around such service.

TT41 SERVICES IN STRUCTURAL OR SEPARATING ELEMENTS

TT41.1 Any service pipe, conduit, duct, sleeve, cable or other equipment recessed into any structural or separating element which is required to have a fire resistance shall be set into such element in such manner that such fire resistance is not reduced to below the required fire resistance.

TT41.2 Any service that penetrates through any wall or floor where such wall or floor is required to have a fire resistance shall be sealed in such a manner that the fire shall not penetrate such wall or floor.

TT42 SMOKE CONTROL

TT42.1 Notwithstanding the requirements of subrule **OO4.3**, any room of which the floor area is more than 500 m² shall be provided with —

- (a) a system of mechanical smoke ventilation; or
- (b) roof ventilators or openable windows or panels to permit smoke ventilation and such roof ventilators or openable windows or panels shall —
 - (i) have an aggregate area of not less than 3% of the floor area of such room or, in the case of any single storey building where such room has an occupancy classified D2 or D3, not less than 1,5% of the floor area of such room;
 - (ii) be located in the roof or in the upper third of the walls, as the case may be, and be distributed in such a way that smoke will be evenly extracted from all parts of the room;
 - (iii) be designed to open automatically when activated by heat or smoke detectors or, where not so designed, shall be capable of being manually operated, without the use of special tools, from the floor of such room:

Provided that where such room is so situated that neither a roof space nor an external wall of the building form part of such room, such room shall be equipped with a system of mechanical smoke ventilation.

TT42.2 Where openable panels are provided on any building elevation for the purpose of smoke ventilation, the position of such panels shall be suitable marked on the outside of the building to permit easy identification by the fire services.

TT43 AIR-CONDITIONING AND VENTILATION SYSTEMS

TT43.1 Any air-conditioning system or artificial ventilation system in any building shall be so designed to prevent the distribution of products of combustion in the event of a fire in such building.

TT43.2 Any air shaft or duct used for air-conditioning or artificial ventilation, including any internal or external insulation thereto and any flexible joint, shall be constructed of non-combustible material or material which has been favourably evaluated by the Council of the South African Bureau of Standards or the CSIR as being suitable for such shaft, duct, joint or insulation: Provided that —

- (a) approved combustible flexible connections may be used where the length of such connection does not exceed 1,5 m and such connection does not pass through any wall or floor which is required to have a specified fire resistance;
- (b) approved combustible flexible joints not more than 250 mm in length may be used in any plant room where such plant room is protected by a smoke detection system.

TT43.3 A fire damper, which shall comply with the requirements contained in SABS 193, shall be provided in any air duct in any position where such duct passes through any required division or occupancy separating element or any element required for the enclosure of an emergency route or passes into any duct.

- TT43.4** Any such fire damper shall —
- (a) close automatically upon the operation of a suitably located sensing device actuated by an abnormal rise in the temperature or by the presence of smoke or combustion gases in the air duct;
 - (b) be provided with adequate access, the position of which shall be clearly marked, for inspection, maintenance and resetting of the mechanism;
 - (c) be so installed as to remain in position at the protected opening even if the air duct distorts during a fire; and
 - (d) be provided with an overriding fusible link.
- TT43.5**
- (a) Any plenum, excluding return air intakes, forming part of an air-conditioning or artificial ventilation system shall be constructed of non-combustible material or of a material which has been favourably evaluated by the Council of the South African Bureau of Standards or the CSIR as being suitable for such construction: Provided that where the sum of the areas of all air supply and return air intake grilles in such plenum is not more than 5 % of the area of surface of such plenum exposed to the room below and no individual grille has an overall area of more than 0,09 m², such grilles may be of combustible material.
 - (b) The supports of any plenum shall be non-combustible.
 - (c) In any plenum system the fire stops, as contemplated in subrule **TT12.5** and **TT13.3**, shall be constructed of steel baffle plates which shall close automatically upon the operation of approved sensing devices actuated when the temperature of the air in such space reaches 15 °C above its design temperature or 45 °C, whichever is the lesser.
 - (d) No plenum system shall be used for storage or for the accommodation of people.
- TT44** **NO SMOKING SIGNS**
- TT44.1** “No smoking” signs of approved size shall be prominently displayed in suitable positions in any division, occupancy, room or any other part of a building where flammable substances are dealt with, used or stored and on the outside of any door leading thereto.
- TT44.2** “No smoking” signs shall be in accordance with the requirements contained in SABS 1186.
- TT45** **LIFT SHAFTS**
- TT45.1** In any building of more than 10 m in height —
- (a) any lift or bank of lifts shall be provided with a lift lobby at every level of discharge which shall be free of combustible material;
 - (b) such lobby shall be divided from the remainder of the floor area by means of walls having a fire resistance of not less than 30 minutes and any door in such walls shall be of an automatic or self-closing type which shall have all edges fitted with flexible seals to prevent the passage of smoke and air when in the closed position and which shall have, when tested in accordance with SABS 1253, a stability and integrity rating of not less than 30 minutes.
- TT45.2** No access doors shall be within a lift lobby.
- TT45.3** Any lift shaft shall have a fire resistance of not less than the requirements for structural stability given in Table 5, subject to a maximum requirement of 120 minutes, and shall be so designed that not more than four lifts are accommodated in any one subdivision of such shaft.
- TT45.4** Where on any storey of a building any lift in a bank of lifts discharges into a division different from that into which the other lifts discharge such lift shall be accommodated in a separate shaft.

- TT46** **LIFT**
- TT46.1** No decorative finish or floor covering of lifts shall have a fire index of more than 2 when tested in accordance with SABS 0177: Part III or IV, as the case may be.
- TT46.2**
- (a) In any building the controls of any lift shall be so designed that in the event of fire such lift shall be brought automatically to the main entrance storey without stopping and shall remain there with its doors open.
 - (b) The requirements of this subrule shall not apply to any building with classification of occupancy H3 or H4.
- TT47** **FIREMEN'S LIFT**
- TT47.1** In any building exceeding 30 m in height there shall be provided at least one firemen's lift to serve any storey including any basement.
- TT47.2** Such firemen's lift shall be in a separate shaft and have on each storey a lobby separated from any other lobby or space by walls and doors which shall have a fire resistance of not less than 120 minutes.
- TT47.3** Such firemen's lift shall —
- (a) have internal dimensions of not less than 1,1 m wide by 2,1 m deep and have a clear door width of not less than 800 mm;
 - (b) be clearly identified as a firemen's lift on every storey;
 - (c) be capable of being stopped at any storey and have access to all such storeys;
 - (d) be kept available for use at all times;
 - (e) be subject to independent control during an emergency;
 - (f) continue to be workable during an emergency when all other lifts have been brought to the main entrance storey as contemplated in rule **TT46**;
 - (g) be provided with a source of emergency power which will enable such lift to operate together with its lights and extract fan for not less than 120 minutes in the event of failure of the mains supply; and
 - (h) be provided with means of oral communication to a control point or to a control room where such a room is provided.
- TT48** **STRETCHER LIFT**
- TT48.1** In any building exceeding three storeys in height where one or more lifts are installed at least one lift shall have dimensions 1,1 m wide by 2,1 m deep and the entrance to the lift shall be not less than 800 mm in width.
- TT48.2** Where such building exceeds 30 m in height the power supply to the motor operating such stretcher lift shall be protected against the effect of fire for at least 120 minutes.
- TT49** **STAGE AND BACKSTAGE AREAS**
- TT49.1** The requirements contained in this rule shall apply to any stage or backstage area, including any area beneath any stage that communicates directly with such stage, in any theatre or other occupancy in which plays, operas or other productions necessitating the use of scenery take place: Provided that the requirements contained in subrules **TT49.2**, **TT49.4**, **TT49.5** and **TT49.6** shall not apply in the case of a stage in any school or church hall or other similar place used solely for the presentation of amateur productions, and shall not apply to any stage not having a fly gallery.

- TT49.2**
- (a) Any area contemplated in subrule **TT49.1** shall be separated from any dressing room, auditorium, workshops, stores or any other area within the occupancy, by walls and floors which shall have a fire resistance of not less than 120 minutes, and any opening, other than the proscenium opening, in such wall or floor shall be protected by a Class B fire door or fire shutter.
 - (b) No dressing room shall be at any level lower than the first basement storey.

- TT49.3**
- Any proscenium opening shall be protected by a fire curtain which shall be —
- (a) of rigid non-combustible construction capable of withstanding a lateral pressure of 500 Pa and such that a representative specimen of such fire curtain, when tested in accordance with the requirements contained in SABS 1253, shall meet the requirements of a Class D door;
 - (b) constructed to slide freely in non-combustible guide rails on both sides of the proscenium opening;
 - (c) so arranged that when fully closed it overlaps the proscenium wall, on the stage side, by not less than 450 mm at each side of such opening and 600 mm at the top and is closed at the bottom onto the stage floor which, if of combustible material, shall be not more than 38 mm thick over a non-combustible slab or wall;
 - (d) so arranged that in the case of a fire it will descend automatically and close such opening;
 - (e) so arranged and controlled that it can descend completely within 30 seconds and be so regulated that for the last 2 m of its descent it does not travel faster than 0,5 m/s; and
 - (f) capable of being both manually and remotely operated:
- Provided that in the case of a stage in any school or church hall or other similar place seating not more than 300 persons and which is used solely for the presentation of amateur productions, a heavy woollen or non-combustible fibre cloth curtain may be substituted for such fire curtain.

- TT49.4**
- Any area contemplated in subrule **TT49.1** shall comply with the following requirements:
- (a) Any structure and any wall, partition, horizontal slab, roofing and ceiling material therein shall be of non-combustible material.
 - (b) Any fitted decorative material therein shall be non-combustible.
 - (c) Any stage floor may be of timber where the supports of such timber floor are supported by a non-combustible floor slab.

- TT49.5**
- In any area contemplated in subrule **TT49.1** the following fire protection equipment shall be provided:
- (a) An automatic sprinkler system and an automatic drencher system to the stage side of the fire curtain so designed as to give adequate protection in the event of a fire.
 - (b) At the highest point of the roof over such area, an acceptable automatic roof ventilation system the effective aggregate area of opening of which shall be not less than 10% of such area and which shall also be capable of being manually operated.
 - (c) A direct communication with the local authority's fire services.
 - (d) Manual alarms in the backstage area in suitable and easily accessible positions.

- TT49.6**
- Any dressing room area shall have direct access to an emergency route.

- TT50 SEATING ARRANGEMENTS IN AUDITORIA OR HALLS AND ON GRANDSTANDS**
- TT50.1** In any auditorium or hall or on any grandstand containing any seating —
- (a) the seating and any aisles serving such seating shall be so arranged as to allow unobstructed movement to the escape routes from such auditorium, hall or grandstand;
 - (b) notwithstanding the requirements contained in rule **TT16** no seat shall be more than 21 m from an escape door or an access door to an emergency route as measured along the route which a person occupying such seat may be expected to travel to arrive at such escape door or access door.
- TT50.2** All seating on any grandstand or in any auditorium or hall not used for more than one purpose shall be fixed to the building: Provided that seating need not be so fixed in any auditorium or hall, or a box therein, which accommodates not more than 25 persons.
- TT50.3**
- (a) Notwithstanding the requirements contained in rule **TT20**, in this subrule —
 - (i) clearance between rows of seats means the distance as measured between plumb-lines from the rearmost part of any seat to the nearest part, including armrests if any, of the seat behind it: Provided that in the case of gravity-operated automatic tip-up seats such distance may be measured with the seats in the tipped-up position; and
 - (ii) where individual seats are not provided every 450 mm of seating shall be deemed to be a seat.
 - (b) The clearance between rows of seats in any auditorium or hall shall be not less than —
 - (i) 300 mm where any person is not required to pass more than 14 seats to leave the row;
 - (ii) 400 mm where any person is required to pass more than 14 seats but not more than 24 seats to leave the row; or
 - (iii) 500 mm where any person is required to pass more than 24 seats to leave the row.
 - (c) The clearance between rows of seats in outdoor grandstands, where backrests are provided to such seats, shall be not less than —
 - (i) 300 mm where any person is required to pass not more than 20 seats to leave the row;
 - (ii) 400 mm where any person is required to pass more than 20 seats but not more than 40 seats to leave the row; or
 - (iii) 500 mm where any person is required to pass more than 40 seats to leave the row;and where backrests are not so provided, or on terraced seating, the minimum distance from the front edge of any seat to the front edge of the seat immediately in front of or behind such seat shall be not less than 675 mm .
- TT50.4**
- (a) Any aisle in any auditorium, hall or grandstand shall have a clear width of not less than 1,1 m or such greater width as contemplated for an emergency route in terms of rule **TT21** for the population served, and the surface of the floor and any steps of such aisle shall be rendered suitably slip resistant and shall at all times be maintained in such slip-resistant condition.
 - (b) Any cross-aisle shall discharge at both ends directly to an emergency route.
- TT50.5**
- (a) The gradient of any such aisle which is not level shall not exceed 1 in 8 and any stepped aisle shall not exceed an overall gradient of 1 in 3.
 - (b) Steps along any such aisle shall be the full width of such aisle and shall be illuminated to a level of not less than 2 lux at tread level when normal lighting has been lowered and shall have uniform tread widths and risers so designed as to reduce the likelihood of any person stumbling.

- TT50.6** Where any aisle crosses parallel to the rows of seats and the floor level of such aisle is higher than the adjacent floor level of any row of seats the edge of such aisle shall be provided with railings not less than 800 mm in height above the floor level of the aisle immediately behind such row, and where the floor level of any row of seats is higher than the floor level of any adjacent cross-aisle the edge of the floor level of such row shall likewise be provided, at the relevant clearance contemplated in subrule **TT50.3**, with railings in front of all such seats, which shall be not less than 800 mm in height above the floor level of such row.
- TT50.7** Any exit door from any auditorium or hall shall be provided with approved panic bolts, and at no time during occupancy of such auditorium or hall by the public shall such door be locked, obscured, obstructed, covered or hidden.
- TT50.8** Any floor covering in any auditorium or hall shall be securely fixed and maintained in a safe condition.
- TT50.9** An approved standby system for emergency lighting independent of the normal mains supply shall be provided in any theatre complex or any individual auditorium, hall or grandstand where the total number of seats exceeds 240 or the floor area exceeds 240 m², in order to afford a level of illumination of not less than 2 lux to enable persons to leave all parts of such theatre complex, auditorium, hall or grandstand in the event of failure of the normal mains supply: Provided that this requirement shall not apply in the case of any hall contemplated in the proviso to subrule **TT49.1**.
- TT50.10** The power supply to such emergency lighting shall be safe-guarded against the effects of a fire for at least 30 minutes.
- TT51** **PARKING GARAGES**
The floor of any occupancy classified J4 shall be of non-combustible material and shall be not less than 10 mm lower than the threshold of any door leading to any adjoining occupancy.
- TT52** **OPERATING THEATRES AND INTENSIVE CARE UNITS**
Where within any building there is a suite of rooms used for the purposes of operating theatres, maternity delivery rooms or intensive care units such area shall comply with the following requirements:
- (a) The walls, floor and ceiling separating such suite from any other suite or from any other part of the building shall have a fire resistance of not less than 120 minutes.
 - (b) There shall be not fewer than two means of exit from such suite.
 - (c) Such suite shall be provided with an approved emergency power supply independent of the normal mains supply and capable of operating for not less than 120 minutes in the event of failure of the mains supply.
 - (d) Any lift used for the transport of patients from such suite shall be provided with an approved emergency power supply independent of the normal mains supply and capable of operating for not less than 120 minutes in the event of failure of the mains supply.
- TT53** **INSTALLATION OF LIQUID FUEL DISPENSING PUMPS AND TANKS**
- TT53.1**
- (a) No liquid fuel dispensing pump or storage tank shall be situated less than 3,5 m from any lateral boundary or street boundary of any site except where there is a boundary wall and such wall has a fire resistance of 120 minutes, is not less than 1,8 m in height and extends not less than 2 m on each side of such pump.
 - (b) No part of such tank shall be situated within 500 mm of any building except in the case of any tank contemplated in subrule **TT54.3**.
 - (c) No such tank shall be situated within 500 mm of any other tank except where each tank is located in its own concrete lined pit.

- TT53.2** No part of any building, other than a canopy or similar projection, to which the occupants of such building do not have access, shall be erected over such dispenser or tank except where —
- (a) the underside of such part is at least 3,5 m above ground level;
 - (b) such part has a fire resistance of at least 240 minutes and extends at least 2 m in every direction beyond the sides of the dispenser and tank concerned; and
 - (c) the floor below such dispenser, where such dispenser is erected over a basement storey, has a fire resistance of at least 240 minutes and extends at least 2 m in every direction beyond the sides of the dispenser and tank concerned.
- TT53.3** Any petrol dispenser shall, where it may be approached by any vehicle, be erected on a raised plinth not less than 150 mm above the surrounding ground level and such plinth shall extend not less than 300 mm beyond the perimeter of the base of such dispenser.
- TT53.4** Any such tank and associated equipment shall be constructed and installed in accordance with SABS 0131: Part III, and SABS 089: Part III.
- TT53.5** The filler pipe of any fuel tank shall be positioned in a masonry or concrete lined chamber not less than 300 mm deep and such pipe shall be clearly identified to indicate its purpose.
- TT53.6** No fuel tank shall have more than one filler pipe, one ventilating pipe and one dipping hole pipe, and such filler and dipping hole pipe shall extend to as near to the bottom of the tank as is practicable.
- TT54** **INSTALLATION OF OTHER TANKS**
- TT54.1** Where on any site liquid petroleum gas is stored in bulk in any vessel which has a water capacity in excess of 500 l the design, erection and protection of such storage facilities shall be in accordance with SABS 087: Part III.
- TT54.2** Where any small container is filled with liquid petroleum gas on any site —
- (a) the location, design and control of the area on such site in which such filling is carried out shall be in accordance with Section 3;
 - (b) the filling equipment shall be in accordance with Section 4;
 - (c) the filling of containers shall be in accordance with Section 7;
 - (d) the storage facilities for such gas shall be in accordance with Section 8; and
 - (e) bulk vehicle discharge of such gas shall be in accordance with Section 9; of SABS 087: Part VII.
- TT54.3**
- (a) In the case of any tank installed inside any building and intended to contain diesel fuel such installation shall be in accordance with SABS 0131: Part II.
 - (b) Any such tank shall not be installed on any storey above the ground storey of any building.
- TT55** **ACCESS TO BUILDINGS FOR FIRE-FIGHTING AND RESCUE PURPOSES**
- TT55.1** No building shall be erected on any site unless such site is provided with suitable access for the purposes of fire-fighting in and rescue from such building by the Fire Services of the local authority.
- TT55.2** Any building shall be provided with suitable access to its interior for rescue purposes by such services and be provided, in terms of rule **TT42**, with a means of smoke ventilation from each storey.

TT55.3 The requirements contained in subrule **TT55.2** shall not apply to any portion of any building which is to be used for the purposes of a strong room, record room, security vault or computer room.

TT55.4 Any escape door shall be clearly identified from the exterior of the building.

TT55.5 The number of any storey shall be indicated inside any emergency route on any access door.

TT56 PRESUMED FIRE RESISTANCE OF BUILDING MATERIALS AND COMPONENTS

TT56.1 In this rule —

- (a) "Class 1 Aggregate" means coarse aggregate of fumed slag, blastfurnace slag, pumice, burnt clinker, crushed limestone, crushed dolomite, crushed brick or crushed burnt clay product;
- (b) "Class 2 Aggregate" means coarse aggregate of gravel or crushed natural stone other than limestone or dolomite; and
- (c) "Plaster" means a layer of plaster not less than 12 mm thick applied to both faces of a wall.

TT56.2 The building materials and components contemplated in Tables 11 to 15 of this rule shall be deemed to satisfy the performance requirements, under fire conditions, provided that such materials and components comply with the relevant detailed descriptions given in such tables.

TT56.3 Any monolithic unreinforced concrete element or any concrete masonry constructed of solid concrete masonry units in accordance with the requirements contained in SABS 0145 shall be considered to be a solid concrete unit and shall be deemed to have the fire resistance given in Table 12.

TT56.4 Only such building materials, components, and methods of construction for which sufficient test data is available are listed in Tables 11 to 15. The tables will, where necessary, be updated when new evidence on performance becomes available. The fact that a material or method of construction is not mentioned in this rule should not be construed to mean that such material or method cannot be used but it shall mean that the fire resistance shall be ascertained by test or be assessed to be suitable for a particular application.

TABLE 11 — STRUCTURAL WALLS: FIRE RESISTANCE

1	2	3	4	5	6
Construction and materials	Minimum thickness (mm), excluding plaster, for fire resistance of				
	240 min	120 min	90 min	60 min	30 min
Solid construction:					
Bricks of clay,					
Unplastered	190	110	90	90	90
Plastered	150	90	90	90	90

NOTE: For concrete masonry construction, refer to Table 4 of SABS 0145.

Commentary: It is important to note that the values given in Tables 11 and 12 refer to the thickness of masonry units of sizes commonly available and do not include any allowance for plaster. Therefore in column 2 of each table, it will be seen that a wall made of units of thickness 190 mm in the unplastered condition will give a fire resistance of 240 minutes. The next lower size has a thickness of 150 mm but this is not adequate on its own to give a fire resistance of 240 minutes. However, when the wall is plastered on both sides (with a normal plaster thickness of at least 12 mm), it is possible to attain resistance of 240 minutes. Similarly, with reference to column 3 of each table, units of 110 mm thickness will give a resistance of 120 minutes or more, but units of thickness 90 mm will not provide this resistance. When plastered however, the 90 mm units are capable of providing fire resistance of 120 minutes. For the lower values of fire resistance, there is no advantage in plastering the wall as the unplastered unit is capable of providing the required resistance.

TABLE 12 — NON-STRUCTURAL WALLS AND PARTITIONS: FIRE RESISTANCE

1	2	3	4	5	6
Construction and materials	Minimum thickness (mm), excluding plaster, for fire resistance of				
	240 min	120 min	90 min	60 min	30 min
Solid construction:					
Bricks of clay					
Unplastered	190	110	90	90	75
Plastered	150	90	90	75	75
Solid concrete units:					
Class 1 aggregates					
unplastered	150	90	75	75	75
Class 2 aggregates					
unplastered	215	150	90	75	75

NOTE: For concrete masonry construction using hollow masonry units, refer to Table 5 of SABS 0145.

TABLE 13 — HOLLOW STUD CONSTRUCTION OF STEEL AND TIMBER STUDS:
FIRE RESISTANCE

1	2	3	4	5	6	7	8	9	10
Type of wall	Type of stud	Stud spacing, mm	Size of stud, mm	Cladding thickness*, mm					
				9,5	12,7	2 x 9,5	9,5 + 12,7	2 x 12,7	† 12,7
				Fire resistance, in minutes					
Gypsum plasterboard Non-structural	Steel	400	50 x 30	—	30	60	60	60	—
			63,5 x 30	—	30	60	60	60	
		600	50 x 30	—	30	—	—	60	—
	63,5 x 30 63,5 x 30		— —	30 20	— —	— —	60 —	— —	
Timber	600	75 x 38	—	—	30	—	30	—	
Gypsum plasterboard Structural	Timber	400	114 x 38	—	—	30	—	30	—
		600	114 x 38	—	—	—	—	30	30
Fibre-cement boards (unpressed) Non-structural	Steel	400	63,5 x 30	20	30	—	—	—	—
			63,5 x 30	30	—	—	—	—	
	600	63,5 x 30	20	20	—	—	—	—	
		63,5 x 30	30	—	—	—	—	—	
Timber	400	75 x 38	30	30	—	—	—	—	
	600	75 x 38	—	30	—	30	—	—	

—Dash indicates that combination has not been tested.

*Same thickness or combination of thicknesses — face and reverse side.

†Glass fibre reinforced gypsum boards.

NOTE

- 1) Screw spacing for each layer of cladding shall not exceed 220 mm .
- 2) Joints of such layers shall be staggered.
- 3) Boards horizontal.
- 4) Cavity filled with mineral wool.

TABLE 14 — PRESUMED FIRE RESISTANCE OF STRUCTURAL STEEL COLUMNS
(Mass of steel not less than 45 kg/m)

1	2	3	4	5	6	7
Construction and materials	Minimum thickness (mm) of protection for a fire resistance for a period of —					
	240 min	180 min	120 min	90 min	60 min	30 min
A. Solid protection*						
1. Reinforced concrete not leaner than 1:2:4 mix with natural aggregates —						
a) concrete not assumed to be structural	50	38	25	25	25	25
b) concrete assumed to be structural	75	50	50	50	50	50
2. Solid bricks of clay or sand-lime	75	50	50	50	50	50
3. Solid blocks of foamed slag or pumice concrete reinforced† in every second horizontal joint	62	62	50	50	50	50
4. Sprayed vermiculite-cement or perlite-cement	—	—	38	32	20	12,5
B. Hollow protection‡						
1. Solid bricks of clay or sand-lime reinforced in every fourth horizontal joint, unplastered	100	75	50	50	50	50
2. Solid blocks of foamed slag or pumice concrete reinforced† in every second horizontal joint, unplastered	75	62	50	50	50	50
3. Metal lath with gypsum or cement-lime plaster of thickness	—	—	45	30	20	12,5
4. a) Metal lath with vermiculite-gypsum or perlite-gypsum plaster of thickness	85	65	38	25	18	12,5
b) metal lath spaced 25 mm from flanges with vermiculite-gypsum or perlite-gypsum plaster of thickness	65	45	25	18	12,5	12,5
5. Gypsum plasterboard with 1,6 mm wire binding at 100 mm pitch —						
a) 9,5 mm plasterboard with vermiculite-gypsum plaster of thickness	—	—	16	12,5	10	7
b) 19 mm plasterboard with vermiculite-gypsum plaster of thickness	32§	19	10	10	7	7
6. Metal lath with sprayed fibre-cement of thickness	85	65	38	25	12,5	10
7. Vermiculite-cement or perlite-cement slabs of 4:1 mix reinforced with wire mesh adequately fixed to the column and finished with plaster skim. Slabs of thickness	—	—	25	25	25	25

* Solid protection means a casing which is bedded close up to the steel without intervening cavities and with all joints in that casing made full and solid.

† Reinforcement. Where reinforcement is required in this table, that reinforcement shall consist of steel binding wire not less than 2,3 mm in thickness, or a steel mesh weighing not less than 0,48 kg/m². In concrete protection the spacing of that reinforcement shall not exceed 150 mm in any direction.

‡ Hollow protection means that there is a void between the protective material and the steel. All hollow protection to columns shall be effectively sealed at each floor level.

§ Light mesh reinforcement required 12,5 mm to 19 mm below surface.

TABLE 15 — PRESUMED FIRE RESISTANCE OF STRUCTURAL STEEL BEAMS
(Mass of steel not less than 30 kg/m)

1	2	3	4	5	6	7
Construction and materials	Minimum thickness (mm) of protection for a fire resistance for a period of —					
	240 min	180 min	120 min	90 min	60 min	30 min
A. Solid protection*						
1. Reinforced concrete not leaner than 1:2:4 mix with natural aggregates —						
a) concrete not assumed to be structural	63	50	25	25	25	25
b) concrete assumed to be structural	75	50	50	50	50	50
2. Sprayed fibre-cement (140—240 kg/m ³)	‡44	‡32	19	15	10	10
3. Sprayed vermiculite-cement or perlite-cement	—	—	38	32	20	12,5
B. Hollow protection†						
1. Metal lath —						
a) with cement-lime plaster of thickness	—	—	‡38	25	19	12,5
b) with gypsum plaster of thickness	—	—	22	19	16	12,5
c) with vermiculite-gypsum or perlite-gypsum plaster of thickness	‡32	19	12,5	12,5	12,5	12,5
2. Metal lath with sprayed fibre-cement — (140—240 kg/m ³) of thickness	85	65	38	25	12,5	10

* Solid protection means a casing which is bedded close up to the steel without intervening cavities and with all joints in that casing made full and solid.

† Hollow protection means that there is a void between the protective material and the steel. All hollow protection to columns shall be effectively sealed at each floor level.

‡ Light mesh reinforcement required 12,5 mm to 19 mm below surface.

NOTE: The use of asbestos fibre-cement in spray applications is prohibited in terms of the Machinery and Occupational Safety Act, 1983 (Act 6 of 1983).

TT56.5 Where concrete structural elements and components are constructed in accordance with the relevant requirements contained in SABS 0100, such elements and components may be presumed to have the fire resistance related to such construction given in the tables in that code. The relevant tables are listed in Table 16.

TABLE 16 — PRESUMED FIRE RESISTANCE OF REINFORCED CONCRETE ELEMENTS AND COMPONENTS

1	2
Element or component	Reference SABS 0100
Reinforced concrete beams	Table 47
Prestressed concrete beams	Table 48
Reinforced concrete floors	Table 49 and 51
Prestressed concrete floors	Table 50 and 51
Reinforced concrete columns	Table 52 and 53
Reinforced concrete walls	Table 54

TT57

NON-COMBUSTIBLE BUILDING MATERIALS

TT57.1

GENERAL

The building materials listed in subrule **TT57.2** are deemed to satisfy the requirements for non-combustibility as prescribed in SABS 0177: Part V singly or in combination with each other. Any addition of organic or other combustible material may render the listed material combustible in terms of SABS 0177: Part V and materials not listed are presumed to be combustible except where proved otherwise when tested in accordance with such code of practice.

TT57.2 NON-COMBUSTIBLE BUILDING MATERIALS

Aluminium (extrusions or castings)
 Fibre-cement
 Fibre-cement products with less than 7,5 % combustible additives
 Brass
 Bricks (burnt clay, lime/sand, cement/sand)
 Cement (portland, blastfurnace, etc.)
 Clay (burnt or unburnt)
 Concrete
 Furnace slag
 Glass (solid)
 Glass fibres (spun, woven or wool, with less than 5% resin content)
 Gypsum (with less than 7,5% paper or other combustibles)
 Lime
 Metals (other than the alkaline metals)
 Mineral wool (with less than 5% resin content)
 Mortar (lime, cement, gypsum)
 Perlite
 Porcelain
 Pumice
 Sand
 Steel (cast or rolled)
 Stone, natural
 Vermiculite

NOTE

- 1) The metals listed may only be considered to be non-combustible when in their solid form and not when in the form of a powder, shavings, etc.
- 2) The percentages given are by mass.

TT57.3 SURFACE FIRE INDEX OF MATERIALS

Samples of finishing materials to be used on vertical and overhead horizontal surfaces shall be tested in accordance with subsections 5.1 to 5.4 of SABS 0177: Part III and the values obtained from such test shall be used to calculate the class to the limiting values given in Table 17, and for a given class of material the requirements given in columns 2, 3, 4 and 5 of such table shall be individually satisfied.

TABLE 17 — CLASSIFICATION OF FINISHING MATERIALS

1	2	3	4	5
Class	Maximum values			
	Spread of flame index, I _f	Heat contributed index, I _h	Smoke emitted index, I _s	Surface fire index, F
1	0,1	0,1	0,2	0,1
2	0,7	0,8	1,0	0,6
3	1,5	1,7	2,0	1,2
4	3,5	3,8	4,0	2,9
5	5,5	5,8	6,0	4,5

TT57.4 FIRE INDEX OF FLOOR COVERINGS

Samples of covering shall be tested in accordance with subsections 6.1 to 6.4 of SABS 0177: Part IV and the values obtained from such test shall be used to calculate the class to the limiting values given in Table 18, and for a given class of floor covering the requirements given in columns 2, 3, 4 and 5 of such table shall be individually satisfied.

TABLE 18 — CLASSIFICATION OF FLOOR COVERINGS

1	2	3	4	5
Class	Maximum values			
	Spread of flame index, I _f	Heat contributed index, I _h	Smoke emitted index, I _s	Surface fire index, F
1	0,2	0,2	0,15	0,1
2	1,0	0,9	0,9	0,7
3	2,1	2,1	2,1	1,7
4	3,9	3,9	3,9	3,3
5	5,0	5,0	5,0	4,5

Commentary: ATRIUM BUILDINGS AND SHOPPING MALLS

In the application of regulation T1 to unusual buildings the accent on and importance of the different requirements may vary but there are two relatively common types of buildings that may require special consideration in view of the unique problems they present in the provision of fire protection measures. Atrium buildings and shopping malls are not adequately covered by the deemed-to-satisfy rules and should in most cases be the subject of a rational design. It is not possible, within the limitations of this commentary, to cover all the problems which may be encountered but certain parameters should be taken into account in any design.

In any atrium building, special problems of life-safety are created in that smoke, hot gases and even flames may travel from one or more rooms into the atrium and thence affect areas which would not be affected in the absence of an atrium. If escape routes can be entirely segregated from the atrium the increase in hazard to life-safety due to the atrium may not be serious but this segregation normally is difficult to achieve.

The major danger in any fire is that of smoke and hot gases accumulating in the atrium and spreading throughout the building since in most cases the atrium is open to rooms on each floor or, at best, separated from them by glass walls. It is therefore essential to provide a properly designed smoke control system but unfortunately little guidance on the subject exists.

Much will depend upon whether the atrium area is used only as a transit area or whether it serves some other functional purpose. Design will also be influenced by whether the atrium is open to surrounding areas or not. The use of fire-resistant glass to close the atrium may be considered but this will not be effective if the glass shatters due to heat effects, if the glazing seals are poor or if a fire should occur on the atrium floor.

The methods of smoke control that may be considered include direct ventilation of the rooms around the atrium, throughflow ventilation of the atrium space, depressurization ventilation of the atrium space and hybrid ventilation of the atrium space.

The direct ventilation of rooms may be achieved either by a dedicated smoke exhaust system or by adapting the normal ventilation system. Where a room is open to the atrium it must be provided with a downstand barrier to create a reservoir within the room or a powerful exhaust intake must be provided at the boundary to prevent hot smoke and gases from entering the atrium. Where the room is separated from the atrium an inlet air supply must be provided which can be via roof vents and through the atrium.

Throughflow ventilation of the atrium is the most common system but is restricted in use because the smoke layer must be above the highest open level. This restricts to between 2 and 5 storeys the height of atrium which can be used. Depressurization ventilation is used in closed atria or in those where rooms are separated from the atrium by fire-resistant glass. Its use presumes a knowledge of the temperature of the gas layers and of the rate

of heat loss to the atrium facade. The hybrid ventilation technique employs throughflow ventilation to create a distinct smoke layer and the depressurization concept to raise the building's neutral pressure plane to a level high enough to protect smoke-sensitive storeys.

It should be noted that whatever method of smoke control is adopted, the most difficult part of any rational design is the assumed fire size on which the design is based and the justification for the assumption made.

In the case of a shopping mall the main problems are smoke control and control of the spread of any fire, combined with safe means of escape for occupants. Since the width of the mall may be restricted by economic considerations the possibility of fire spreading across the mall is a problem and full compartmentation is usually not possible. Sprinkler protection, in individual shops and in any concealed spaces will slow the spread of fire and, particularly in the case where there are many small shops, may enable fire to be restricted to the area in which it originates. Where high-ceilinged sections of the promenade areas are to be used as smoke reservoirs care must be taken that smoke is not unnecessarily cooled by sprinklers set at too great a height to be effective.

Smoke control can often be achieved by natural ventilation methods but it is important that adequate smoke reservoirs be created. In this context it is imperative that a smoke-free zone at least 2,1 m high be maintained to allow people to escape. Where smoke and hot gases are exhausted from a building these must be replaced by fresh air but the interaction between air inlets (such as doors) and the smoke reservoir can be a matter for concern. If the smoke base in the reservoir is not sufficiently far above the inlet, turbulence at the air-smoke interface will cause smoke to mix with the incoming air and thus to be carried through the mall.

Escape from a mall should be reasonably safe provided that no point is further than the usually accepted distance of 45 m from an escape door. Where higher portions of the building are approached through the mall every effort should be made to provide entirely separate escape routes which will lead directly from such portions of the building to the open air without going through the mall.

PART U REFUSE DISPOSAL

REGULATIONS

U1 PROVISION OF AREAS

Any building, excluding a dwelling house, in which refuse is or will be generated shall be provided with an adequate storage area for refuse containers.

U2 ACCESS TO AREAS

The location of any area contemplated in regulation **U1** shall be such that access thereto from any street for the purpose of removing the refuse, is to the satisfaction of the local authority.

U3 REFUSE CHUTES

Where any refuse container receives refuse from any chute such chute shall be designed and erected so as to be safe in operation.

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PART V SPACE HEATING

REGULATIONS

V1 DESIGN, CONSTRUCTION AND INSTALLATION

(1) Any system of space heating in any building shall be so designed, constructed and installed as to operate safely and any flue, flue pipe or chimney used in such system shall be so designed as to safely remove any smoke or noxious gases produced by such system.

(2) The requirements of subregulation (1) shall be deemed to be satisfied where the design and construction of any flue pipe, chimney, hearth or fireplace complies with Part V of section 3 of SABS 0400.

DEEMED-TO-SATISFY RULES

VV1 GENERAL

The regulation contained in Part V of the National Building Regulations shall be deemed to be satisfied where any flue pipe, chimney, hearth or fireplace complies with deemed-to-satisfy rules contained in the following provisions of this Part.

VV2 FLUE PIPES

VV2.1 No flue pipe shall be designed and installed in such a manner that it will cause a fire hazard to any adjacent material.

VV2.2 No flue pipe shall be connected to any shaft or duct which forms part of a ventilation system.

VV2.3 No flue pipe shall be installed in any shaft or duct in which any services which may be adversely affected by heat are to be situated.

VV3 CHIMNEYS

VV3.1 Any chimney which is within or is attached to a building shall comply with the following requirements:

(a) It shall be designed and erected in non-combustible materials and in such a manner that it will not cause a fire hazard to any adjacent material.

(b) It shall not be installed in any shaft or duct in which any services which may be adversely affected by heat are to be situated.

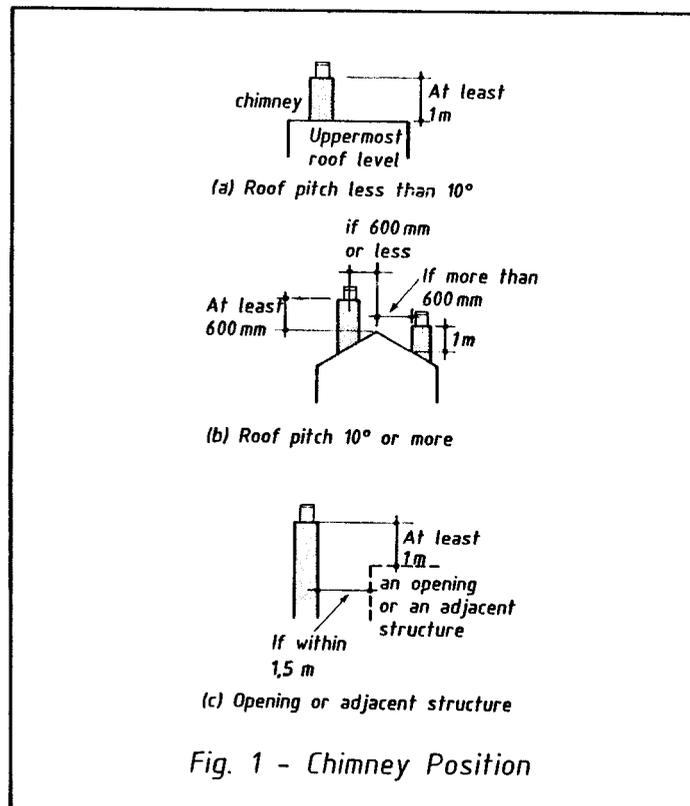
(c) No combustible material such as a timber floor joist, trimmer or roof truss shall be built within 200 mm of the inside of such chimney.

VV3.2 (a) Where in any dwelling house or dwelling unit the walls of any chimney are erected of masonry units such walls shall be of solid masonry, and where such walls are less than 190 mm thick such chimney shall be lined in compliance with subrule **VV3.3**: Provided that any such walls shall not be reduced to less than 90 mm in thickness.

(b) Without prejudice to the requirements contained in paragraph (a) the thickness of any chimney wall in any building covered by a combustible roof shall be not less than 190 mm .

- VV3.3** Where any chimney is provided with a flue lining such lining shall be made of material which will withstand any action of the flue gases and resist, without cracking or softening, the temperatures to which it may be subjected and it shall extend throughout the full height of such chimney.
- VV3.4** Where any chimney has either a laterally unsupported height greater than 4 m or a laterally unsupported height greater than six times its minimum lateral dimension it shall be designed in accordance with the requirements for the design of structural systems contained in Part B of the National Building Regulations.
- VV3.5** The height of any chimney outlet shall be not less than —
- (a) 1 m above the highest point of contact between such chimney and the roof: Provided that where a roof has an angle of slope on both sides of a ridge of not less than 10° from the horizontal and the centre line of the flue of the chimney is not more than 600 mm from the ridge, the height of such chimney outlet shall not be less than 600 mm above such ridge;
 - (b) 1 m above the highest point of any window or roof light capable of being opened or any ventilation inlet situated in any roof or external wall where the horizontal distance from the nearest point of such window, roof light or opening to a vertical line through the centre of such chimney outlet is less than 2,3 m;
 - (c) 1 m above the eaves level in the case of any chimney which does not pass through the roof of a building but is within 1,5 m of the nearest wall of such building: Provided that at a gable end of such building such chimney shall extend not less than 600 mm above the highest point of such gable end.

Commentary: Figure 1 illustrates chimney height measurements.



VV4 HEARTHS AND FIREPLACES FOR SOLID FUEL APPLIANCES

VV4.1 Every fireplace used for the burning of solid fuel shall have a hearth made of non-combustible material of adequate thickness.

VV4.2 Such hearth shall extend not less than 500 mm in front of the grate or fire basket and not less than 300 mm beyond each side of such grate or fire basket.

VV4.3 No timber floor joist or trimmer or any other combustible material shall be built into any hearth.

[The following text is extremely faint and illegible due to low contrast and scan quality. It appears to be a list of items or a table of contents.]

PART W FIRE INSTALLATION

REGULATIONS

W1 FIRE INSTALLATIONS

Any approved fire installation shall be connected to a communication pipe supplied by the local authority. Provided that such local authority may, subject to any conditions it may consider necessary, allow such fire installation to be connected to —

- (a) any approved alternative source of supply; or
- (b) any source of non-potable water, where such water is not to be used for domestic or any other purpose which, in the opinion of such local authority, might give rise to a health hazard.

W2 SUPPLY OF WATER

Water shall not be taken from a supply system for use in any fire installation, unless —

- (a) an application has been made to the local authority for the supply of such water and such application has been granted; and
- (b) the use of such water and fire installation complies with any conditions imposed by the local authority.

W3 DESIGN OF FIRE INSTALLATIONS

In any fire installation —

- (a) adequate pumping connections and means of measuring water pressure shall be provided;
- (b) so many isolating valves shall be provided to control the flow of water to the installation, and to points within the installation, as the local authority may require; and
- (c) the quantity, pressure and rate of flow of water shall be adequate for the supply of any hose reel, hydrant or sprinkler system connected thereto.

W4 DEEMED-TO-SATISFY REQUIREMENTS

The requirements of regulation **W3** shall be deemed to be satisfied where any fire installation —

- (a) is the subject of acceptable rational design proposals prepared by a professional engineer or other approved competent person; or
- (b) is a fire installation that complies with Part W of section 3 of SABS 0400.

DEEMED TO SATISFY RULES

WW1

GENERAL

The requirements of regulation **W3** shall be deemed to be satisfied where any fire installation is designed and constructed in accordance with deemed-to-satisfy rules contained in the following provisions of this Part.

WW2 COMMUNICATION PIPE

Any fire installation shall be connected to a communication pipe provided by the local authority and located at a position and depth to be determined by such local authority.

WW3 WATER METER

Where so required by the local authority provision shall be made in any fire installation for the supply and installation by the local authority of a water meter.

WW4 ISOLATING VALVES

An isolating valve shall be fitted in any fire installation at a position not more than 1,5 m inside the boundary of the site.

WW5 FIRE INSTALLATIONS

WW5.1

Any fire installation shall be so constructed as to provide —

- (a) a quantity of water sufficient for the effective operation of that number of hose reels, hydrants and sprinkler heads which may be operated or come into operation simultaneously in any division.
- (b) a flow pressure, at any hose reel or hydrant, of not less than 300 kPa and a flow rate of not less than —
 - (i) 0,5 ℓ/s per hose reel; and
 - (ii) 20 ℓ/s per hydrant.
- (c) a flow pressure and flow rate at the control valve of any sprinkler system appropriate to the hazard rating of such system.

WW5.2

In any fire installation —

- (a) the nominal diameter of —
 - (i) any communication pipe serving such installation shall be not less than 75 mm .
 - (ii) any pipe supplying water to any fire hydrant shall be not less than 75 mm: Provided that where the length of such pipe is more than 50 m the nominal diameter of such pipe and of the communication pipe to which the installation is connected shall be not less than 100 mm .
 - (iii) any service pipe supplying water to any hose reel on any one storey of a building shall be not less than —
 - (aa) 25 mm, if it serves 1 or 2 hose reels;
 - (bb) 32 mm, if it serves 3 hose reels;
 - (cc) 40 mm, if it serves 4 or 5 hose reels; and
 - (dd) 50 mm, if it serves more than 5 hose reels.
- (b) any pipe which serves any hydrant and hose reel installation or an automatic sprinkler installation, shall be provided with a twin pumping connection.
- (c) any pipe serving only hose reels shall be provided with a single pumping connection.
- (d) any pipe fitted with one or more fire-pump connectons shall be fitted with a pressure gauge reading up to 2 500 kPa and a reflux valve so located as to shut off automatically the direct supply of water from the local authority system to such installation whenever and for so long as any such fire pump connection is in use.

WW5.3

No reflux valve in any fire installation shall be so positioned as to prevent or hinder the flow of water from any fire-pump connection to any hose reel or hydrant connected to such installation.

WW5.4

Any fire installation shall be connected —

- (a) directly to the communication pipe where the local authority's water supply is capable of providing the pressure and rate of flow required for hose reels contemplated in subrule **WW5.1**; or

- (b) to a storage tank of adequate capacity where so required by the local authority or where the local authority's water supply is not capable of providing such pressure and rate of flow: Provided that where any fire installation is connected to such storage tank a pump shall be fitted between such tank and any hose reel and provided further that such pump shall be capable of supplying water at the topmost hose reel at a pressure of 300 kPa and a rate of 0,5 ℓ/s and shall function automatically with the opening of any hose reel nozzle.

Commentary: *The storage tank contemplated in subrule WW5.4 is essentially to provide a supply of water for "first-aid" fire-fighting purposes and is not intended to be the total quantity of water needed to extinguish a full-scale fire. The quantity of water required will be determined by a number of factors, the most important being —*

- (a) *the occupancy classification of the building;*
- (b) *the size and location of the building;*
- (c) *capability (and perhaps availability) of the fire brigade;*
- (d) *average response time of the fire brigade;*
- (e) *training and knowledge of persons who might be expected to operate hoses;*
- (f) *availability and use of alternative "first-aid" fire-fighting methods.*

It is unlikely that there will be need to provide for the use of more than two hoses and in the majority of cases only one hose will be operated.

The water may be stored in a separate tank or, in a combined system, in a tank with two outlets arranged in such a way that a certain quantity of water is reserved for the fire installation. Where such quantity of water has not been determined on the basis of a rational design it is recommended that a quantity of 9 kℓ be stored.

WW5.5

Such storage tank shall be connected, supplied with water and controlled in accordance with the following requirements —

- (a) The point of connection between such storage tank and any supply pipe shall be above the level of the outlet of the topmost hose reel.
- (b) Such storage tank shall be supplied with water in a manner adequate to fill and to maintain it automatically to its required capacity except when any hose reel connected to it is in use, and where the supply of water is controlled by a ball valve, such valve shall have a diameter of not less than 20 mm and shall be fitted with a manually operated shut-off valve.
- (c) A reflux valve shall be provided on any pipe at a position between the topmost hose reel and the point of connection of such pipe to such storage tank and so arranged as to cut off the flow of water from the tank whenever and for so long as any associated fire-pump connection is in use.
- (d) A manually operated shut-off valve shall be provided on any pipe at a position between such fire-pump connection and any hose reel supplied by such fire-pump connection and so arranged that the flow of water direct to such hose reel may be cut off when the fire-pump connection is not in use.

WW5.6

Where in any fire installation any hydrant valve or hose reel is installed at a height greater than that at which the local authority is capable of maintaining an adequate water supply from its water supply system, or through the equipment of its Fire Department, such installation shall —

- (a) be capable of maintaining a flow rate of not less than 20 ℓ/s at a gauge

pressure of not less than 300 kPa at any hydrant valve connected to such fire installation; and

- (b) be provided with —
- (i) a tank located at or below ground level which shall —
 - (aa) have a capacity of not less than 25 kℓ;
 - (bb) be supplied by a service pipe which has a diameter of not less than 20 mm and is connected to a communication pipe and provided with a pressure gauge reading up to 2 500 kPa, controlled at its outlet by a high pressure automatic shut-off valve;
 - (cc) be connected to a supplementary service pipe which has a diameter of not less than 100 mm, a twin fire-pump connection fitted at its inlet and an outlet so positioned as to discharge into the top of the tank;
 - (dd) be provided with a gauge to indicate the level of water contained in the tank.
 - (ii) not less than two interconnected pump units individually capable of producing and maintaining the pressure and the flow rate contemplated in subrule **WW5.1** and each of which shall —
 - (aa) be fitted with either a manual starting mechanism or an automatic starting mechanism that will start such pump units automatically with any reduction of the static pressure in the fire installation: Provided that such automatic starting mechanism shall be fitted with a manual override control;
 - (bb) be driven by an electric motor connected to the normal electric power supply and also to a diesel-electric unit which shall start automatically and immediately in the event of failure of the normal electric power supply;
 - (cc) be connected to a delivery pipe having a diameter of not less than 100 mm, or not less than 150 mm in the case of any delivery pipe which exceeds a height of 50 m above the pump;
 - (iii) devices limiting the gauge pressure at any hydrant valve to 700 kPa under full flow conditions.

WW5.7 Any fire installation equipped with automatic pump starting mechanisms shall be fitted with an alarm system designed to emit a continuous audible warning whenever and for so long as any pump installed in the installation is set in motion.

WW5.8 Any fire installation equipped with manual pump starting mechanisms shall be kept constantly charged with water and shall at all times be under the supervision and control of a person who is fully conversant with all the technical details of the installation and its warning devices.

WW5.9 Any alarm system shall be provided with an alarm cancel button.

WW5.10 Any pump unit and its starting and driving mechanisms shall be installed in a ventilated compartment constructed to have a fire resistance rating of not less than 120 minutes and where any such compartment is located at or below ground level, the entrance or other means of access thereto shall abut on a street, public place or an open area on the site: Provided that where any such compartment is located in any basement, the means of access thereto shall be enclosed by walls having a fire resistance rating of not less than 120 minutes and shall not be used as a means of access to any other part of the building.

WW5.11 In any building in which pumps form part of the required fire installation, an intercommunication telephone system shall be provided for the use of the Fire Department of the local authority and such telephone system shall include the following:

- (a)** Wall-hung hand-sets or standard type connections for portable hand-sets that permit intercommunication between the main entrance to the building and all storeys and all pump and tank rooms.
- (b)** Where portable hand-sets are installed, not less than three such hand-sets shall be kept in a cabinet at the main entrance to the building and each connecting point for a portable hand-set shall be housed in a box with a transparent and easily breakable glass panel.
- (c)** Any telephone in a pump room shall be fitted with loudspeaker equipment of sufficient strength and clarity to transmit a voice distinctly over a distance of not less than 5 m from the loudspeaker when the pumps are in operation.

APPENDIX 1. CERTIFICATE, SIGN AND SPECIMEN FORM
(This appendix does not form part of the provisions of the code)

1-1 An illustration of a certificate (see A17(2)) for use by Building Control Officers is shown below:

ART 5	WET/ACT 103/1977	SEC 5
Foto Photo Plaaslike bestuur	Local Authority
	Boubeheerbeampte* Building Control Officer*	
	Naam Name	
	Handtekening Signature	
	Handtekening Signature	Stadsklerk/Town Clerk Sekretaris/Secretary
Datum Date		
*Includes officer contemplated in Section 6(4) of Act *Omvat beampte bedoel in artikel 6(4) van die Wet		

1-2 An illustration of the sign (see SS9.1)(a)) used to indicate facilities provided for disabled persons is shown below:



1-3 A specimen form (see A19(5)) for the appointment of a professional engineer or other approved competent person is shown on page 225:

SABS 0400-1990

224

**NATIONAL BUILDING REGULATIONS
APPOINTMENT OF PROFESSIONAL ENGINEER OR OTHER COMPETENT PERSON**

- 1 LOCAL AUTHORITY
- 2 PROPOSED WORK
- 3 DESCRIPTION OF PROPERTY
- 4 I,
being the owner of the above property, have in terms of regulation A19, appointed:
- 5
to undertake the design of
- 6
and the inspection of this work during the course of construction in order to check compliance with
the approved design, such appointment being effective from
- 7

The above-named person has accepted the appointment and under an agreement in terms of regulation A1(9), has undertaken to accept responsibility for providing the above-mentioned local authority with such drawings, details and particulars as it may require in terms of the regulations. In so far as such drawings, details and particulars may refer to work of a structural nature, such person has further undertaken to inform the above-mentioned local authority if it appears that any structural work is being carried out in a manner which may endanger the strength, stability or serviceability of the building or any adjoining building or structure.

Should the above appointment be terminated before construction of the building is completed, I undertake to inform the local authority accordingly and, where necessary, to make a new appointment.

SIGNED:

OWNER: DATE:

PERSON APPOINTED: DATE:

REGISTRATION NO.

ACADEMIC, PROFESSIONAL OR OTHER QUALIFICATIONS:

EXPERIENCE:

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DETAILS FOR COMPLETION OF FORM

- 1. Insert name of local authority.
- 2. Insert one or more of the following as required: Proposed new building, or Alterations/Additions/Conversion/Extensions/Rebuilding/Re-erection/Subdivision/Structural repair to/of existing building.
- 3. Insert description of property, e.g. erf no. and township, farm portion no., etc.
- 4. Insert the full name of the registered owner of the property.
- 5. Insert the full name of the person or firm appointed.
- 6. Insert description of work to be undertaken.
- 7. Insert date of appointment.