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Date: 14 October 2019

A GUIDE TO THE SUBMISSION OF ARTIFICIAL VENTILATION PLANS

When submitting artificial ventilation (and/or air conditioning) plans to Council for consideration and approval, kindly check that your submission complies with the following:

- **National Building Regulations** [NBR] and Building Standards Act (Act No. 103 of 1977),
- **South African Bureau of Standards** Code of Practice 0400-1990 [SABS],
- **Noise** Control Regulations [NCR] promulgated in terms of Section 25 of the **Environment** Conservation Act (Act No. 73 of 1989).

The following Regulations and other requirements may be applicable to the plans (where the letters "SABS" appear without the reference number of the standard, SABS Code of Practice 0400 is implied):

1. Regulations:
   - (a) **Air conditioning** and ventilation systems, plenums, ducting, fire precautions, fire dampers..... NBR (SANS 10400 Parts O and T4.43)
   - (b) **Air quantities** in litres per second..... NBR (SANS 10400 PART O Table 2
   - (c) **Condensate**..... NBR (SANS 10400 4.3.2.8)
   - (d) An E.C.S.A. Registered Professional Person must certify the **Design** of artificial ventilation systems (use A19 form) ……NBR (SANS 10400 4.1.2.6; Regulation 04)
   - (e) **Exhausts:** (toilets, bathrooms, etc.)..... NBR (SANS 10400 4.3.2)
   - (f) **Fresh air** source and **Filtration** specifications ..... NBR (SANS 10400 4.3.2)
   - (g) **Parking garages** ……NBR (SANS 10400 4.3.2.6)
   - (h) **Noise from outdoor equipment** (max 50dBA on the boundary for residential applications)……NCR PN200/2013
   - (i) **Habitable room** ……NBR (SANS 10400 3.15)
   - (j) **Smoking areas/ rooms** ..... NBR (SANS 10400 4.4; 4.3.2.11)
   - (k) **Natural & 'cross' Ventilation**.....NBR (SANS 10400 4.3)
   - (l) **Plans** and particulars required (kindly colour new work on plans, provide site plans, fan selection data, etc.) ……NBR (SANS 10400 A2 to A7)
   - (m) **Occupancies** ……NBR (SANS 10400 A Table 1)
   - (n) **Ventilations and Pressurisation** of stairwells……NBR (SANS 10400 T 4.24; 4.25)
   - (o) **WC's, bathrooms, sauna, refuse rooms**……NBR (SANS 10400 O 4.3.2.4)
   - (p) **Smoke control** (spaces exceeding 500m^2)……NBR (SANS 10400 T 4.42)
   - (q) **Smoke Control** (spaces exceeding 500m2^2) .....NBR T1(1) & SABS TT42

(r) **Uniform distribution of air and air movement**.....NBR (SANS 10400 O 4.3.2.9)

(s) **Health facilities**.....NBR (SANS 10400 Table 2)

2 "***Where artificial ventilation (or air conditioning) is involved, the necessary details together with a Certificate of Appointment (A19 application form of the duly authorised ECSA Registered Professional Person), must be submitted with the plans"***

3. Please indicate the intended use and the design population of all rooms based on NBR A20 AND NBR A21 (SABS).

4. Where full height partitions / walls are erected in previously approved artificially ventilated spaces, kindly indicate the duly required design modifications to the existing systems, air volumes, etc.

5. Indicate the positions of all fire dampers.

6 Fire dampers must comply with SABS Code 0193 and must be installed wherever a duct penetrates a firewall or floor slab (refer to SABS Rule T43.3).

7 Show the installation details for these dampers. In the case of kitchen canopy extract systems, the ducting must be fire-proofed throughout (as fire dampers will tend to become jammed by deposits).

8. Indicate the mode of control for toilet and shower exhaust fan operation (eg. Timer or light switch must not be connected to the lighting circuit SANS10400 4.3.2.4)

9. Door grilles must be installed (or the doors undercut sufficiently) to all spaces served by artificial ventilation.

10 General Layout drawings must comprise plans, sections and elevations to describe fully, every part of the artificial ventilation and/or air conditioning systems.

11 The positions of section lines must be indicated on the plan views and all plans, elevations and sections must be fully dimensioned.

12 Please consider providing a **table** on the plans showing each room requiring artificial ventilation and/or air conditioning with the corresponding **floor areas, design population, fresh air supply and exhaust rates in litres per second** as indicated below:

Example:

Floor	**Space**	**L x W x H**	**Vol m^3**	**Rate** l/s or ACH	**Population density [NBR]**	**Air Cond. Fresh Air Exhaust**	**Minimum air volume required**	**Design air volume**
Ground	shop	5m x 20m x 2.4m	240	7.5 l/s per person or 2 ACH	1p/10m^2 = 10p	Fresh air	75 l/s	100 l/s
First	Toilets	3 wc, 1 sh 2 whb	20	25 l/s per person or 10 ACH	n/a	Exhaust 4 x 25l/s	100 l/s	125 l/s

13. Indicate the positions, materials, sizes of ducting and all diffusers, grilles and weather louvres.

14. Please refer to any available Council drawings of typical installations (available on request) for

examples of the preferred arrangements that should be shown on your drawings.

15. The artificial ventilation &/or air conditioning plans must correspond exactly with the architectural plans received at the date of formal plan submission in all respects.

16. Please note: only ONE fan system and discharge is permitted per restaurant kitchen.

Plans may be submitted to the offices of the local Building Control Plans Submission Centre.

For enquiries: (021) 400-3781.

KITCHEN CANOPY EXHAUST SYSTEMS

(a) Indicate the dimensions of canopies and the heights above floor level. **Show sections through such canopy to indicate filtration details** (canopies should be 150mm larger than the cooking appliances served and at least 2.1 metre from underside to floor level). Only one fan and canopy exhaust system per restaurant kitchen is permitted.

(b) Readily removable **access** panels for cleaning and inspection must be indicated at regular intervals and at each change in duct direction.

(c) Indicate the exhaust rates, (at least 0.5 m/s over face of canopy), positions, make, model, sizes and type of grease removing **filter devices** to be installed in the kitchen canopies (approved activated-carbon filters and/or scrubbers may be necessary in applications where a nuisance may be caused).

(d) Kitchen canopy exhaust systems shall not contain sound attenuators unless:

- such attenuators have been favourably evaluated by the SABS as being suitable for such application; and
- they cannot accumulate grease or other condensate.

(e) Indicate the heights of **the points of discharge**, which shall be not less than 1 metre above the eaves of a flat roof or higher if the roof is of the pitched type.

(f) The effect of the **discharge plume** on all surrounding buildings, fresh air intake positions and the **topography** of the area must be taken into account in assessing the heights and locations of points of discharge.

(g) It is recommended that kitchen exhaust discharge vertically upwards [NBR] V1.

(h) If any risk attaches to Kitchen Canopy exhaust systems, then a “Rational Design” may be required in terms of [NBR] Regulation T1(2).

(i) The relevant inspector for the site reserves the right to call for additional “Make up” air volume (depending on the site conditions) to compensate for excess heat experienced by kitchen staff. Therefore, please consult the plan examiner for a ruling before completing the designs.

(j) “Tea Kitchens” must have an exhaust system separate from toilet and similar air systems.

Guidelines for the design of designated Smoke Areas and Smoke Rooms

Information Document Date: 2008-02-28

The objective is to supply fresh air, to extract smoke from a smoke area or smoke room in order to maintain a negative pressure in such smoke area or smoke room (so that air is prevented from passing back into the building) and to supply the necessary signage, in accordance with the NBR and the Tobacco Products Control Amendment Act.

Explanatory note:
SMOKING ROOM: *In terms of the NBR, a smoking room is a dedicated room for smoking purposes only.*
SMOKING AREA: *In terms of the Tobacco Products Control Amendment Act, a smoking area is an area that is partitioned off with a solid partition and door and may not exceed 25% of the total floor area of the public place.*

Guidelines:

1. *Smoking areas must be separated by a solid partition with a self-closing entrance door on which a sign "SMOKING AREA" is displayed, written in black letters, at least 2cm in height and 1.5cm in width, on a white background.*
2. *The message: "SMOKING OF TOBACCO PRODUCTS IS HARMFUL TO YOUR HEALTH AND TO THE HEALTH OF CHILDREN, PREGNANT OR BREASTFEEDING WOMEN AND NON-SMOKERS. FOR HELP TO QUIT, PHONE (011) 720-3145" to be displayed at the entrance to the designated smoking area (or smoking room), written in black letters, at least 2cm in height and 1.5cm in width, on a white background.*
3. *Notices and signs indicating areas where smoking is permitted and where it is not permitted must be permanently displayed and signs indicating that smoking is not permitted must carry the warning: "ANY PERSON WHO FAILS TO COMPLY WITH THIS NOTICE SHALL BE PROSECUTED AND MAY BE LIABLE TO A FINE".*
4. *Artificial ventilation that serves the smoking area (or smoking room) must comply with the following:*
   - *Maximum occupancy rate must be 1 person per m^2 or the number of seats.*
   - ***7.5 l/s** minimum fresh air supply required per person in a smoking area and **20 l/s** minimum fresh air supply per person in a smoking room.*
   - *The rate of extraction must exceed the rate of supply, to such an area (or room), that a negative*
   - *pressure will be maintained (I.e. air will not pass back into the building). Such extract air must be discharged to the outside atmosphere without causing a nuisance.*
   - ***Example 1:** When a smoking area (or room), has an external wall, fresh air may be introduced via opening windows, but the smoke must be extracted by a separate extract system. A Certificate of Compliance must be submitted by a Registered Person. No plans are required, unless structural changes are proposed or a ducted system is installed.*
   - ***Example 2:** When a smoking area (or room), does not have an external wall, fresh air may be introduced from an existing, if any, supply air system. However, such an existing system, must not be used to extract air from such a room (i.e. any return air terminals to be blanked off). A separate extract system must be installed.*
   - ***Example 3:** When a smoking area (or room), does not have an external wall, and where no artificial ventilation system exists, fresh air must be supplied by means of an artificial ventilation system. A separate extract system must be installed.*

*Note (i): Except for Example 1, **building and ventilation plans must be submitted to Council, for approval**. Such plans must be certified by a Registered Person as contemplated in terms of the National Building Regulations and Building Standards Act before any work commences.*
Note (ii): In any space described as public assembly occupancy, the escapes route must not be compromised by the provision of a smoking room or smoking area.
Note (iii): A smoke room or area, capable of a population density of 25 or more persons will be required to have a minimum of two (2) separate fire escape routes.

For more information, please contact:
Mechanical Engineering: 021-4003781