ULTIMATE FIRE DESIGNS

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The Chief Emergency Services
Polokwane City Council
Vermikuliet Str
Polokwane
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Attention: Mr. Hannes du Plessis

Sir

FIRE SAFETY DESIGN FOR PROPOSED INTERNAL ALTERATIONS ADDITIONS EXISTING INDUSTRIAL BUILDING ON ERF 337 & 338, ANNADALE

We have been retained by our clients to prepare and submit for your approval, the fire safety design for proposed internal alterations to an existing industrial building located on erf 337 & 338, on the corner of Witklip Road and Railway Str, Annadale, Polokwane

The project consists of a single building and will converted to be used as shops, and the summary details of the building are as follows:

Floor	Type	Occupancy	Floor Area	Design Population	Total People
Ground	Moderate Risk Storage	J2	49m²	1 person per 50m²	1
	Large shop > 250m²	F1	299m²	1 person per 10m²	30
	Large shop > 250m²	F1	1372m²	1 person per 10m²	137
First	Office	G1	68m²	1 person per 15m²	4
Total			**1788m²**		**172 People**

The building is occupied by a retailer, and is used for the display and sale of consumer goods. The overall risk is therefore moderate due to the potential generation of noxious fumes in the event of a fire, and the fire loading will be 25-50kg/m² (timber equivalent). No manufacturing processes, bulk storage of goods or food preparation will take place in this area.

The building has a total floor area of 1788m², and this area must then be evaluated in respect of SANS 10400-2020.

REGULATION T1(1)(a)

Regulation T1(1)(a) states as follows:

> **"(a) the protection of occupants or users therein is ensured and that provision is made for the safe evacuation of such occupants or users"**

A number of roller shutter door will be installed in the outside walls of the building for after hours security purposes, but these will be kept fully opened at all times during working hours to allow for the continuous entry and exit of persons. Additional exit doors are provided at various points along the periphery of the warehouse as shown on the drawings.

The evacuation of occupants is based not upon prescriptive distances, but an evaluation of the geometric space wherein which a fire may occur with resultant smoke and flames threatening life. Hence the reaction time, speed of, movement dependent on population levels, as part of theoretical performances is deemed far more accurate than a simple single distance factor.

There is central passage running from one side of the building to the other, and these allow direct escape to the outside through doors with a minimum width of 1.8m, thereby allowing at least 190 persons to escape through these doors when evaluated in terms of rule 4.21 of SANS 10400-2020:T. In addition, some of the large or deeper shops also have alternative escape routes, as shown on the attached fire protection plans.

In all cases, the following must also be taken into consideration when determining escape routes from a given building:

Mobility - Areas will be generally open without encumbering machinery with good visibility around the passages and from individual units. All the occupants will also be free to move, and no one person will be restrained in any manner, as might be in any one of the E occupancies.

Density - Occupant density will not exceed 1/10m^2. This will allow for free movement to any of the escape routes available per floor.

Discipline - Occupants (except visitors) will not be strangers to the general layout of the building but will be able to react in an evacuation action. People here will be apt to respond to authority in a fire with less likelihood of endangering behaviour.

Egress Routes - All egress routes will be open and free and any doors installed along the passages or into the internal spaces, will be open during working hours.

Human Behaviour – Although as many as necessary determined aspects relating to escape have been theoretically calculated in this report, human behaviour is indeterminable. The reaction of a building's occupants is related to the role assumed, previous experience, education, personality and perceived threat of the fire situation. Albeit such aspects are broad and not easily determinable, data indicates that building occupants react in a co-operative and altruistic manner during fires.

Early Warning – The value of an early warning system such as a smoke detection and alarm system cannot be overstated, and accordingly a fully automatic smoke detection and alarm system complying with the requirements of rule 4.31 of SANS 10400-2020:T as well as SANS 10139 will be installed, and this system shall comply overall with the requirements for a life safety system as detailed further on in this document.

All exit doors shall open in the direction of escape as shown on the attached plans, and shall be fitted with approved locking devices such as panic bars or thumb turn locks. Electrically operated striker type locks and break glass key boxes are expressly forbidden.

All exit routes and doors shall be indicated by means of photoluminescent escape signs in compliance with SANS 1186-5, which shall have minimum dimensions of 290mm x 290mm. The installation height shall be such that the signs remain visible over the tops of display shelving or other storage methods.

Artificial lighting will be provided in all common escape passages in accordance with rule 4.30 of SANS 10400-2020:T, and all this building does not require emergency routes, a backup power supply to the lighting is not required. It is not anticipated that the building will be in use during the hours of darkness, further obviating the need for emergency lighting.

We thus submit that the intentions of regulation T1(1)(a) have therefore been complied with.

REGULATION T1(1)(b)

Regulation T1(1)(b) states as follows:

> **"(b) the spread and intensity of such fire within such building and the spread of fire to any other building will be minimised"**

This regulation has, as is clear from the text, the plain and simple purpose of controlling the spread of fire within a given building or to adjacent or proximal buildings.

All occupied areas within the building, fall within the same category as given in regulation 4.6.1, and therefore no additional occupancy or tenancy separating elements are required nor provided. The building is small enough (less than 2500m²) that a sprinkler system is not required.

Internally, there will be some subdivisions as shown on the plans creating trading areas, but these will not be separated from the remaining area of the building, except by means of partition walls of approximately 2.5m in height. These walls will however be constructed from standard 12.5mm drywall partitions on both sides of light steel framing, and such a structure has a fire resistance of at least 30 minutes as per table 13 of rule 4.55 of SANS 10400-2020:T.

The open design of the internal layout will allow for the free movement of people throughout the building, and the absence of a suspended ceiling will allow for the free flow of smoke into the roof void area, from where it will be ventilated to the outside as discussed further on in this document.

Although the building is close to the site boundary on the western and northern elevations, both these walls will be a full height brick wall with a thickness through of 230mm, and therefore compliant with the requirements of a type “FR” wall as contemplated in regulation 4.2.4. and only some openings such as doors will be present.

The safety distances between the building and the northen and western site boundaries are 2.1m and 7.2m respectively. In the northern elevation, there are 2 exit doors in the wall, with a total area of openings of 1.68m² each. These doors are however in separate divisions, and the safety distance is then only calculated for one opening. In terms of table 2 of rule 4.2.4, any opening of less than 5m² is permitted, and will require a safety distance of at least 1.5m, and this distance is complied with.

In the western elevation, there are a total of two double doors with a combined area of opening of 12.47m², and therefore the required safety distance must be determined.

The required safety distance in terms of rule 4.2.4 is calculated by the formula:

$$D = 3.25 \times \text{Log}\,(A - 3) - (1/A)^{1/2}$$

Where: D = Safety distance (to be calculated)
A = area of openings facing boundary = 12.47m²

Therefore:

$$D = 3.25 \times \text{Log}\,(12.47 - 3) - (1/12.47)^{1/2}$$
$$D = 3.25 \times \text{Log}\,(9.47) - (0.08)^{1/2}$$
$$D = 2.75 \times 0.976 - 0.283$$
$$D = 2.41\text{m}$$

As the distance on this boundary is 7.2m, the building is compliant in this regard.

The eastern and southern boundaries both face onto public streets with no adjacent property, and therefore the safety distances are not applicable.

Fitted floor coverings and wall finishes shall comply with the requirements of rule 4.14 and 4.15 and SANS Code of Practice 10177 parts III and IV, as the case may be. No fitted floor coverings will be utilised in the J2 occupancy areas.

We thus submit that the intentions of regulation T1(1)(b) have therefore been complied with.

REGULATION T1(1)(c)

Regulation T1(1)(c) states as follows:

> **“(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”**

This regulation has as its’ intent the prevention of collapse or damage to adjacent buildings should this building suffer major structural damage in the event of a fire.

The primary purpose of such protection is to allow occupants time to escape in the event of a fire or other emergency, whilst also providing a time frame for fire fighters and rescuers to carry out their duties. In this regard, the regulations require a period of 1 hour for such activities, and the design and construction of the building will allow for this time frame, albeit that portions of the roof might start collapsing earlier depending on the severity and intensity of a fire.

As the building itself is of steel portal type construction, with concrete columns and re-inforced concrete slabs, with masonry infill's, it would be impossible to design such steel structures, within cost effective parameters, as to provide indefinite structural integrity of such steel structures, as is implied by this regulation. It is therefore accepted practice to design such buildings to maintain structural integrity for a period of at least 1 hour, after which time partial or even complete collapse becomes increasingly likely. By this point however, all persons should have been evacuated, and fire fighting operations should be well advanced if not completed.

The overall structure is designed and certified by a registered engineer, and the design is such that partial or complete collapse of the structure would have little or no effect on adjoining buildings. It is a well known fact that portal type structures tend to collapse inward onto themselves, with little or not damage caused to adjacent properties by debris projected as a result of such a collapse.

There are no inflammable substances present in the building, thereby all but eliminating the likelihood of serious explosions, and thereby reducing the chances of damage to surrounding buildings by projected, possibly burning, materials.

We thus submit that the intentions of regulation T1(1)(c) have therefore been complied with.

REGULATION T1(1)(d)

Regulation T1(1)(d) states as follows:

> **"(d) the generation and spread of smoke will be minimised or controlled to the greatest extent reasonably practicable"**

This regulation serves to control the generation of smoke and the spread thereof in a fire situation.

The total area of the new shop being created is approximately 1372m², and whilst there are internal sub-divisions shown on the plans, there are no fire barriers between these areas, and all are in fact open at ceiling level, thereby allowing the free passage of smoke into the smoke reservoir.

To determine the amount of ventilation required for the purposes of smoke extraction, we will use the formulas commonly applied to ventilation solutions.

DESIGN BASES

REFERENCE DOCUMENTS

A. Technical Papers 7 & 10 by the Ministry of Technology and FOC Joint Fire Research in the UK.
B. Smoke control methods in enclosed shopping complexes of one or more storeys: a design summary by H P Morgan
C. Fans in Fire Safety, JA Wild, Woods of Colchester 1995

For a typical fire, as this area is a large shop with a moderate quantity of combustible materials present, which will be primarily class A products, a total heat flux of 160kW/m² into the smoke layer for the room must be provided for. (This is the minimum quantity that can be used) The fire size will typically be 20.25m². The fire growth will be moderate at 0.012kJ/s³ due to the presence of combustible goods.

The fire size and heat output stated above is the internationally accepted standard for fire venting in a room.

Even with a ventilation system present, it is accepted that a layer of smoke and hot gasses will form beneath the roof covering but by doing so the discharge of smoke through the vent is increased. Since the hot layer develops a pressure load to drive out the smoke, at the same time the rate of production of smoke will decrease as the clear height above the fire becomes smaller.

Equilibrium will be reached when the smoke venting is equal to the smoke production and this is our basis for our design of the ventilation.

Estimating the rate of smoke produced by a fire without ventilation

m = 0,188 x þ x Y to the power of three divided by 2
= 0,188 x 18 x 2.5 to the power of three divided by 2
= 13.38 kg/sec

Determine the energy output of the fire:

Q = q x Af
= 160 x 20.25
= 3240Kw

Determine the average gas layer temperature above ambient:

$$\theta = \frac{Q}{m \times e \times 1{,}005}$$

$$= \frac{3240}{13.38 \times 0.96 \times 1.005}$$

= **251.05°C**

Determine the ambient air temperature in absolute

$T_o = T + 273$
= 20 + 273
= **293K**

Determine the average gas layer temperature of the smoke plume in ambient

Tc = To + θ
= 293 + 251.05
= 544.05K

The client wishes to install fire rated turbine ventilators on the roof, for reasons of assisting with general climate control within the building. As these ventilators are wind powered, and actually increase their efficiency with an increase in temperature, to determine the quantity of ventilators requires becomes a simple calculation of determining the volume of smoke produced in a fire, and then dividing this by the rated flow of the ventilator.

We have already calculated the amount of smoke generated about, at about 13.38m³/s, and the temperature of the smoke layer has been calculated to be approximately 251°C or 544°K. At this temperature, the density of the smoke layer can be calculated by:

$O'_b = To/Tc$

Where:

O'_b = Density of smoke layer in kg/m³
To = Ambient air temperature in absolute = 293K
Tc = Smoke layer temperature in absolute = 544K

Therefore:

$O'_b = To/Tc$
= 293/544
= 0.54kg/m³

We can now calculate the volume of smoke produced as follows:

$V = m \div O'_s$

Where:

V = Volume of smoke in m^3
m = Mass of smoke in kg/s = 13.38kg/s
O'_s = Density of smoke = 0.54kg/m^3

Therefore:

$V = m \div O'_s$
$V = 13.38 \div 0.54$
$V = 24.8 m^3/s$

We propose to install the 610mm Backdraft fire rated turbine ventilator as provided by Windmaster Turbines, and the specifications of this unit are shown in the attached brochure. As each of the units has a flow rate of at least 1.89m^3/s, we will therefore require at least 14 units to be provided in the roof of the building.

The combined flow of these units will be 26.46m^3/s, which is more than what is required as per our calculations.

It is also important to remember that the smoke generated figures as used above, are based on a developed fire, whereas these ventilators will be operating almost permanently. Furthermore these ventilators will not be subject to any time delay before commencing with ventilation, as would be the case with fusible link type ventilators set to open at a pre-determined temperature, and smoke extraction would commence almost immediately.

Summary of calculated values

DESCRIPTION	SYMBOLS	VALUE	UNIT
Area of smoke zone	A	1372	m^2
Height from floor to centre of window/vent	h	7.75	m
Depth of smoke layer	db	5.25	m
Size of fire	Af	20.25	m^2
Perimeter of fire	þ	18	m
Distance between floor and smoke layer under roof	Y	2.5	m
Heat output of fire	q	160	Kw/m^2
Energy output of fire	Q	3240	Kw
Absolute temperature	Ta	273	K
Ambient Air Temperature	T	20	°C
Ambient Air Temp in Absolute	To	293	K
Sprinkler activation temp (no sprinklers = 0)	Ts	0	°C
Ambient Air Density	e	0.96	kg/m^3
Average gas temp of smoke plume in absolute	Tc	544.05	K
Acceleration due to gravity	g	9.81	m/sec^2
Mass flow of gas into smoke layer	m	13.38	kg/sec
Density of smoke layer	O'_s	0.54	kg/m^3
Average gas layer temp above ambient	Θ	407.96	°C
Ventilator flow (each)		1.89	m^3/s
No of ventilators required	#	14	Units
Total smoke flow		26.46	m^3/s

In terms of the above, we submit that the intentions of regulation T1(1)(d) have been complied with.

REGULATION T1(1)(e)

Regulation T1(1)(e) states as follows:

> **"(e) adequate means of access, and equipment for detecting, fighting, controlling and extinguishing such fire, is provided"**

Ample provision is made on three (3) of the elevations of the building for the purposes of access to the site by fire fighting vehicles, and the width of the internal roads is in excess of 7.5m.

The buildings will be equipped with fire fighting equipment in the positions as indicated on the fire protection plans, and in accordance with the following requirements:

- Fire hose reels to rule 4.34 and SANS 543-2005
- Dry chemical powder fire extinguishers to 4. 37 and SANS 810
- Pillar type fire hydrants to local authority specifications, rule 4.35 and SANS 1128

All fire fighting equipment shall be indicated by means of symbolic safety signs in accordance with SANS 1186 with a minimum dimension of 290mm x 290mm in all areas.

Fire extinguishers in the office area shall be 4.5kg units, and all other units shall be 9.0kg units.

WATER SUPPLY FOR FIRE FIGHTING PURPOSES

Section W 4.5.4 (a)(b) of the national building regulations SANS 10400-2011 states as follows:

> **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 sub-rule 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 300kPa and a rate of 0,5 l/s and shall function automatically with the opening of any hose reel nozzle.**

OUR PROPOSAL AND MOTIVATION IN REPLACEMENT OF WW5.4 (a)(b) ARE AS FOLLOWS:

WATER SUPPLY AND STORAGE

Our water reticulation system will be designed and calculated on 200 kPa. The reason for this figure of 200kPa is that this is the only maximum pressure the Polokwame City Council can guarantee.

The isolating valve will be 1,5 meters into the site boundary.

A non-return valve will be installed in the hose reel supply pipe to prevent hose reel water from returning to the domestic supply.

Although it is known that the municipal water pressure in the Polokwane area, specifically where this building is located, is adequate for fire installations, we are required to base our calculations on an available pressure of 200 kPa.

FIGURES AND FORMULAS NEEDED TO CALCULATE AVAILABLE WATER PRESSURE AT THE HOSE NOZZLE:

P	= Municipal Pressure	= 200 kPa
P_l	= Pressure loss in pipe and fittings	= 1,2 kPa
h	= Height of connection above mains	= 0 m
P_s	= Static Pressure	= 0 kPa

l = Length of Hose-reel = 30 m
P_{lh} = Pressure loss through hose = 34,80 kPa
P_n = Pressure available at nozzle

P_n = 200 - (1,2 + 0 + 34,80)
= 164kPa

DISCHARGE FROM NOZZLE:
FLOW THROUGH ORIFICE of the NOZZLE

L = 0,067 x d² x $\sqrt{Pn}$
L = Flow Rate = liters per minute
D_n = diameter of nozzle = 6,4 mm
P_n = available pressure of nozzle = 164 kPa

L = 0,067 x d² x $\sqrt{P_n}$
= 0,067 x (6,4) ² x $\sqrt{164}$
= 0,067 x 40,96 x 12.8
= 35.13 litres per minute or 0.58 litres per second

THE HORIZONTAL DISTANCE REACHED BY A SOLID WATER STREAM FROM A NOZZLE IS GIVEN AS FOLLOWS:

$$HD = \left(\frac{P_n}{50} + 9 + \frac{d_n - 19}{3}\right) 1,5$$

HD = Horizontal distance covered - m
P_n = Nozzle pressure - kPa
d_n = Nozzle diameter - mm
(Reference = Shepherds Fire service Hydraulics)

$$HD = \left(\frac{P_n}{50} + 9 + \frac{dn - 19}{3}\right) 1,5$$

$$HD = \left(\frac{164}{50} + 9 + \frac{6,4 - 19}{3}\right) 1,5$$

HD = [3.28 + 9 + (-4,2)] 1,5

= **12.12 meters**

FIRE LOAD

The fire load in this occupancy is equivalent to 50kg per m² in terms of SANS 10400-2020. The fire load is thus moderate.

We calculate the calorific value in MJ/m². This is done as follows:

Fire load = Timber equivalent x 18
= 50kg/m² x 18
= **900 MJ/m²**

If an area of 10m² is involved and wood char at a rate of 0,8mm/minute we can accept only 10% of the energy would be released to sustain combustion.

Time taken to extinguish a class A fire with a fire hose reel

Specific heat capacity of water	0,0042 Mj/kg/°C
Temperature raises	80°C
Heat for 20°C to 100°C raise in temperature	0,336 Mj/kg
Latent heat of vaporization	2,257 Mj/kg
Total heat absorption (water to steam)	2,593 Mj/kg
Discharge in kg per minute (per Fire Hose Reel)	35.13 kg
Energy Absorbed per minute	91.1 Mj/min

Total Energy to be absorbed (18Mj/kg x 50kg/m²) 900MW
Time to extinguish the fire = 900 ÷ 91.1

= 9.88 minutes

These calculations however assume that a fire is allowed to develop beyond the incipient stage, whereas we can assume that a fire will be attacked as soon as it is detected by personnel on the premises. A fire occuring after hours will probably develop further before it is detected, and will be attacked by firefighters using their own high volume equipment rather than the internal fire hose reels.

SUMMARY:

If the water mains maintain a pressure of 200 kPa the expected flow out of the hose reel will reach a distance of 12.12 meters. With the classified moderate fire load of 900 MJ the fire can be extinguished in 9.88 minutes.

Taking all these factors into consideration we can see that the flow pressure availability at the nozzle is sufficient to extinguish this type of fire load.

In view of the above calculations we feel the installation of a 9000-liter storage tank on site to supply the hose reel installation is not necessary.

Hose Reels will be installed to provide total coverage of the floor areas.

The Hose Reels will comply with the requirements contained in SANS 543. These hose reels will bear in a prominent position on the reel disc, the mark of standardisation relative to the requirement contained in SANS 543.

The feed pipe of the hose reels will be combined of the domestic water main and the nominal diameter will be as stated in sub rule WW5.2. (a)(iii)

The nominal diameter of the communication pipe will not be less than 25mm.

W4.5.2 Fire and Domestic Water

SANS 10252-1: 2016 STATES THAT REGARDING THE INSTALLATION OF COMBINED DOMESTIC AND FIRE WATER REGULATIONS:

6.8.1.1.1.1. A fire installation can be either a discrete fire installation or combined with a general installation (i.e. combined installation).

6.8.1.1.2. A fire installation in a building is essentially an extension of the reticulation in the street reserve and is normally necessary to augment the fire brigade's special equipment.

6.8.1.1.3. It is recommended that water be used only to extinguish Class A fires e.g. fire loads of wood textiles and paper and all goods manufactured there from.

6.8.1.1.4. Hose reels in a building are mainly intended for use by the occupants of a building as a first-aid measure at the time of the outbreak of a fire and until such time as the brigade arrives.

6.8.1.1.5. Water meters and other fittings in the service pipe can cause considerable pressure loss.

6.8.1.1.6. Combined installations should only be provided in buildings without booster pumps, since the automatic starting of such pumps are initiated by flow or pressure fluctuations in the installation.

OUR PROPOSAL AND MOTIVATION IN REPLACEMENT OF SUB-RULE W4.5.2 ARE AS FOLLOWS:

We propose to combine the domestic and fire fighting reticulation. The connection will be a minimum 100mm connection and will supply the fire hose reels, fire hydrants and the domestic consumption points.

As this is a shop development, water consumption will be low when compared to residential and industrial consumption standards.

A number of fire hose reels are provided and we intend not to install a booster pump because of the following reasons:

- The domestic water main and fire main will be one supply pipe and thus it will be just an extension of the municipal main.
- The hose reels will only be used for initial fire fighting by the tenants until the first response of the fire engine.
- The occupants will use the fire hose reels as first aid equipment in case of a fire as stated above. The fire department will work directly from the fire engine using attack lines and will not boost the hose reel supply to combat a fire.

Smoke detection and alarm system

An automatic fire detection and alarms system complying with the requirements of a type “L1” and “M” system as defined in SANS Code of Practice 10139-2012 shall be installed in all occupiable areas of the facility.

The system shall consist of *inter-alia* the following components:

- Optical smoke detectors in all rooms, passages and other occupiable areas;
- Manual “break-glass” type call points at all exit doors;
- Sounders;
- Warning strobes;
- Reporting/control panel.

The system must also be so designed that, in the event of activation, all magnetic hold-open devices for any fire doors where provided, are released, allowing these doors to close automatically as assisted by the door closers. All escape doors that have access control devices fitted, shall be released by the system. Where central HVAC or fresh air systems are provided, these shall be interfaced into the alarm system as to shut down automatically upon receipt of an alarm signal. It is not necessary to shut down individual cassette/console type airconditioners which do not draw in fresh air from the outside.

We thus submit that the intentions of regulation T1(1)(d) have therefore been complied with.

SUMMARY EXPLANATION OF RATIONAL DESIGN AND OTHER FIRE SAFETY MEASURES

1. All the work will comply with SANS 10400-2020:T or W with the exception of those existing sections as addressed in this Rational Design.

2. Fire Fighting Equipment

   - DCP Fire Extinguishers to be installed in the buildings as shown on the drawings. Work done in accordance with SANS 0105.
   - 30m x 20mm fire Hose Reels to be installed in the building. Work done in accordance with SANS 543.
   - Pillar type fire hydrant to be installed on the premises as per the details shown on the drawings in accordance with SANS 1128. Hydrant coupling to be to local authority specifications.
   - Double 65mm booster connection with non return valve to be installed as detailed. Booster connection to comply overall with rule 4.5 of SANS 10400-2011:W

3. Water supply for firefighting equipment to be combined with domestic water supply and will have a minimum connection diameter of 80mm.

4. All fire protection equipment and emergency exits will be sign posted by means of symbolic safety signs, which will comply with SANS 1186 to indicate the position or direction of exit.

5. Escape doors may only be fitted with locking devices as approved by the local authority. All exit doors must be supplied with approved locking devices.

6. Floor coverings to comply with 4.14 and must be non-combustible in the J2 areas. Fitted floor coverings in the remainder of the buildings shall comply with class 4 products when tested in terms of SANS 10177-IV.

7. Wall finishes shall comply with 4.14 and must be non-combustible in the J2 areas. Wall finishes in the remainder of the buildings shall comply with class 2 products when tested in terms of SANS 10177-I.

8. A final inspection must be done at the completion of the project with the local Fire Safety Official as well as the Fire Consultant present.

THE OWNER/DEVELOPER IS AWARE OF THE ABOVE REQUIREMENTS AND UNDERTAKES TO COMPLY WITH THE PRESCRIBED FIRE NOTES PERTAINING TO THIS PROJECT.

In view of the above motivation we are satisfied that the occupants of this building can safely escape to a safe area and that the intention of the regulations as contemplated in T1 and W1 of SANS 10400-2020 has been met by this design.

We trust that this design will meet your professional approval.

Yours sincerely

LUKE HARTOG
FIRE SAFETY CONSULTANT
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