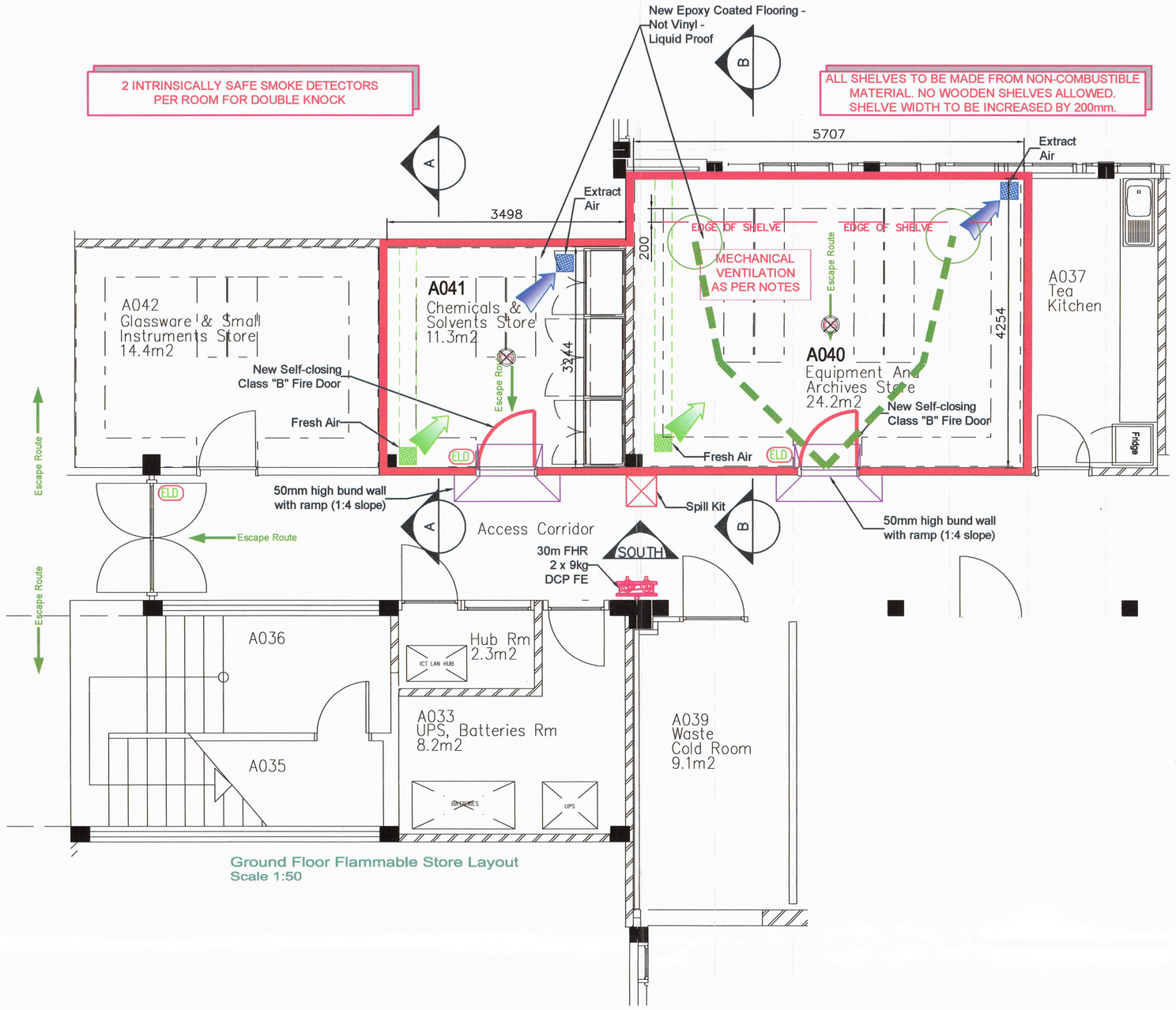


Ground Floor Flammable Store Layout
Scale 1:50

Flammable Liquid Store Requirements:

A040 Capacity
Type of flammable liquids with volumes
Storage volume = 250 l Total
Room area = 24.2m²
Bund capacity = 50mm
= 1210 l

A041 Capacity
Type of flammable liquids with volumes
Storage volume = 250 l Total
Room area = 11.3m²
Bund capacity = 50mm
= 565 l

Danger Notices in Storeroom
1. Symbolic safety signs prohibiting open flames and smoking, at least 290 mm x 290 mm in extent, manufactured in accordance with the provisions of SABS 1186, are affixed externally to the storeroom; and
2. The store capacity which may be stored indicated in 75mm high red letters against a white background on the outside of the door(s) to the store room

Construction of the Flammable Liquid Storeroom

1. The construction the store room must be in accordance with the following requirements:
   (a) (i) The walls must be of brick or concrete.
   (ii) The floor must be of concrete.
   (iii) The roof must be of reinforced concrete of which the composition must offer fire resistance of at least 120 minutes.

Doors
1. The store room must be equipped with Class B-type fire doors manufactured and installed in accordance with SABS 1253: Provided that -
   (a) The said doors must open to the outside and have a lock or locks as are approved by the Chief Fire Officer;
   (b) Any door providing access to a storeroom must at all times be capable of being opened easily from the inside without the use of a key.

Spill Kit
Spill kit to be provided outside of the flammable liquid store

Ventilation
1. The Flammable Liquid store must be so designed and constructed to ensure that the collection of fumes of hazardous substances is effectively ventilated, whether naturally or mechanically, in all parts of the room. The fumes must be released into the open air at a place or places where the fumes are not likely to come into contact with any source of ignition, which may ignite such fumes.

Mechanical ventilation
1. The flammable liquid storeroom must be equipped with mechanical inlet and outlet ventilation system designed and installed for this purpose: Provided that -
   (a) The capacity of the system must be able to change the cubic air content in the storeroom at least 15 times an hour;
   (b) The vanes of the fan system must be manufactured from a static-free material;
   (c) The fumes must be released into the open air and the outlets must not be within 5 m of any opening of a building or erf boundary;
   (d) All ventilators must be attached firmly to the inside of the walls;
   (e) The bottom ventilators must be a affixed as close as possible to the level of the sill; and

Electrical equipment
1. The owner or person in charge of a storeroom must ensure that -
   (a) All electrical apparatus, fittings and switchgear used or installed in any storeroom are protected and installed in accordance with the equipment of the appropriate class and division type for the particular area in terms of the provisions of SANS 10102; This store is a Zone 1 classification
   (b) All switchgear, distribution boxes, fuses and any other electrical equipment not in compliance with the provisions contained in SANS 10102 must be situated outside the storeroom and positioned so as not to come into contact or possibly come into contact with fumes escaping from the storeroom;
   (c) All metal parts and electrical fittings and any device in or in connection with a storeroom are earthed effectively with each other and the ground;
   (d) Switches actuating any mechanical ventilation system are situated outside the storeroom;
   (e) Any mechanical ventilation system is on at all times, except whenever the system is switched off for repairs and/or replacement purposes: Provided that if the mechanical ventilation system breaks down, the system must be repaired without delay, and if the system breaks down irreparably, the system must be replaced without delay; and
   (f) Whenever the flammable liquid storeroom is not staffed, all electrical apparatus and fittings, with the exception of the mechanical ventilation system, are switched off.

Electrical installations installed by qualified electricians
1. All electrical installations must be installed and certified by a suitably qualified electrician: Provided that the certificate must be submitted to the Service for record purposes immediately after installation.

Lighting of Store
1. All lights installed shall be of the incandescent electric type, which shall be enclosed in an outer flame and vapour proof fitting, and all wiring shall be armoured cable or enclosed in seamless metal tubes, the junctions of which are screwed together. All switches, junction boxes, fuses and other electrical equipment shall be outside the store.

COMPLY WITH SANS 10108 AND SIGNED OFF BY MASTER ELECTRICIAN

02/11/2018

Handling and Usage of Flammable Substances

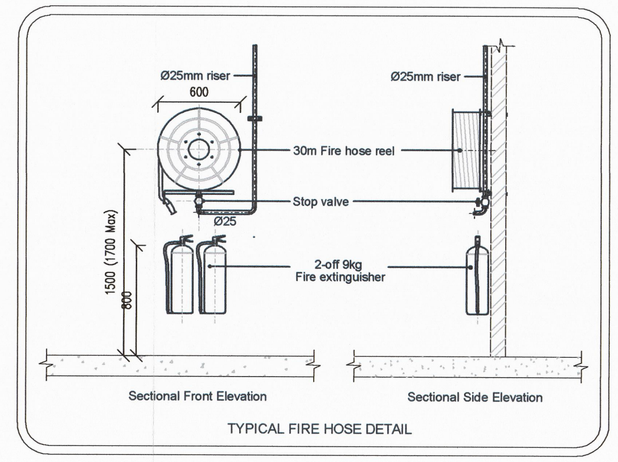
1. Handling and usage of flammable substances to be in accordance with SANS 10263 (Client responsibility).

Ventilation

Ventilation @ 15 Air Changes per Hour:

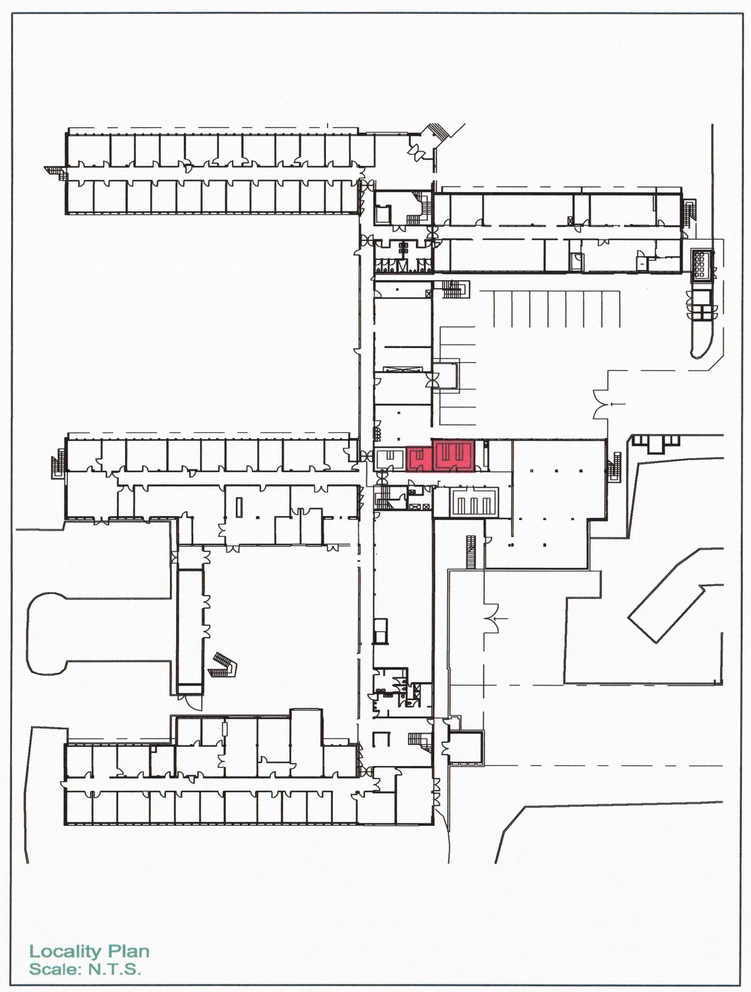
A040
$\frac{24.2m^3 \times 2.7m \times 15\ APH}{3600\ s/h} \times 1000\ l/m^3 = 272\ l/s$

A041
$\frac{11.3m^3 \times 2.7m \times 15\ APH}{3600\ s/h} \times 1000\ l/m^3 = 127\ l/s$

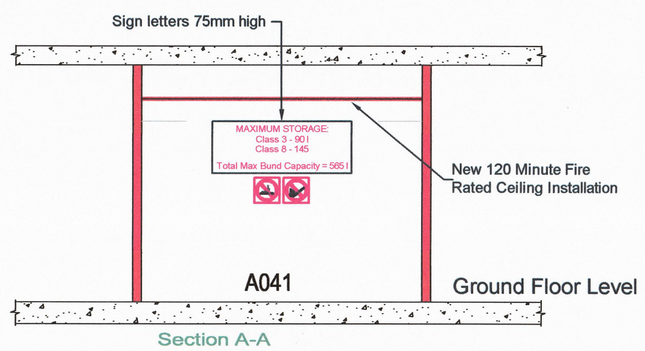


TYPICAL FIRE HOSE DETAIL

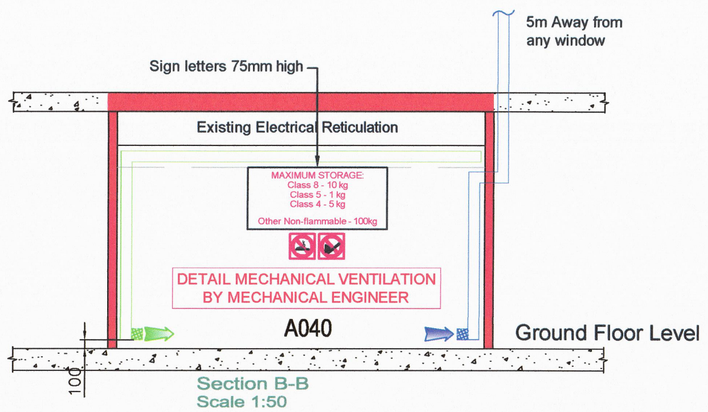
Detail "A"
Scale 1:50



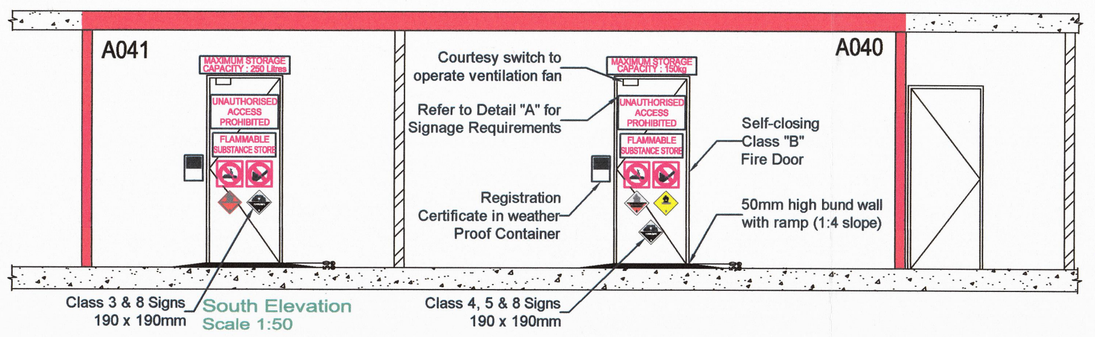
Locality Plan
Scale: N.T.S.



Section A-A
Scale 1:50



Section B-B
Scale 1:50



South Elevation
Scale 1:50

Ground Floor Level

CITY OF TSHWANE RATIONAL DESIGN ACT 103/1997 SECTION 4(2)
01 NOV 2018
FOR CHIEF FIRE OFFICER FINANCIAL SERVICES

RECEIVED
2018 -10- 29
FG/2052/18

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GENERAL NOTES:
1. No dimensions to be scaled or scanned from drawing
2. All dimensions to be checked on site before work is put in hand
3. All work to comply with Fire Engineer's specifications.
4. The subcontractor is responsible for correct field dimensions, clearances and heights, fabrication processes and techniques of construction co-ordination of his work with that of all other trades, providing all devices necessary for safe and satisfactory operation.
5. All installation work to comply with Occupational Health & Safety Act (Act 85 of 1993).
6. All uncertainties to be verified with the Fire Engineer.

FIRE NOTES:
1. Occupancy Classification: J1
2. Extinguishers to be installed in accordance with SANS 10105 as per plan.
3. Hose reels to be installed in accordance with SANS 10543 as per plan at a height of 1500mm above floor level.
4. Hydrants to be installed in accordance with SANS 1128 : Part 1 as per plan at a height of 1000mm above ground level.
5. Portable fire extinguishers to be hung on purpose made boards, as indicated on plan.
6. Escape doors may only be fitted with locking devices approved by local authority.
7. All fire doors to comply with SANS 1253 and be provided with self-closing device.
8. Fire sealing of penetrations by approved fire sealing specialist contractor.
9. Floor coverings to be non-combustible
10. Wall coverings to be non-combustible.
11. Photoluminescent statutory emergency signs to be provided and to comply with SANS 1186 : Part 1 and 5.
12. Suspended ceilings and its supporting members, shall be of non-combustible material.
13. Fire walls to be constructed full height from floor to underside of slab or roof covering with all penetrations and gaps fire sealed or provided with appropriate fire damper to SANS 193
14. No occupation will take place prior to the issuing of an Occupancy Certificate.

ESCAPE ROUTES

Directional arrows indicate path of primary escape. All doors along escape routes indicated with these arrows are to be provided with emergency lockbolts approved by the Fire Department. (This includes thumb-turn locks. Rediam bolts or panic bars (break glass key boxes not acceptable). Any access control provisions to these doors to be provided with green emergency override break glass box no arranged to release the door immediately on activation.

HOSE REEL NOTES:
All pipework to hose reels to be Class 9/1.2/16 with the following diameters:
- 20mm where the pipe serves 1 or 2 hose reels;
- 32mm where the pipe serves 3 hose reels;
- 40mm where the pipe serves 4 or 5 hose reels; and
- 50mm where the pipe serves more than 5 hose reels.

- Hose reel & 2 x extinguishers
- Fire extinguisher
- Booster connection
- 65mm Pillar Type Fire Hydrant
- 65mm Right-Angle Fire Hydrant
- 100mm Fire Hydrant with Instantaneous Coupling
- 100mm Fire Hydrant with Storz Coupling
- Self-closing Class 'B' Fire Door
- Self-closing Smoke and Draft Fire Door
- FLD Emergency Locking Device
- 60min Fire-rated Firewall
- 120min Fire-rated Firewall
- Smoke Baffle
- Natural Smoke Ventilation
- Intrinsically Safe Smoke Detector, Single Knock Confirmed Fire

Revision Notes

A	Issued for Client Approval	11/09/2018	DN
B	Update as per Fire Department request	23/10/2018	WRR

Revision Table

Rev	Description	Date	By
B	Update as per Fire Department request	23/10/2018	WRR
A	Issued for Client Approval	11/09/2018	DN

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Specialist Fire Safety Consultants
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CESA
GREEN BUILDING COUNCIL

Project:
CSIR Building 10
CAS Laboratory Relocation

Location:
CSIR Campus
Scientia 627 J.R
Pretoria

Drawing Description:
Flammable Liquid Store
Ground Floor
Fire Protection Plan

Designed	J. Prinsloo	10/09/2018	Scale
Drawn	D. Nel	10/09/2018	1:50
Checked	J. Prinsloo	10/09/2018	

Architectural Drawing Refrence	Date	Rev
10/145/DP	06-05-2014	D

Project Number	Discipline	Status	Bld Division	Floor	Level	Rev
07718	100	D	0	GF	3	B