

Operation & Maintenance Manual For Staircase Storey Shelters

ISSUED BY:



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Chapter 1: Introduction

1.1 Background

With the implementation of the Civil Defence (CD) Shelter Act 1997 on 1 May 1998, new residential developments (i.e. public and private houses and flats) are to be provided with either household or storey shelters. The household shelter (HS) in a dwelling unit is designed with strengthened walls, floor and ceiling, and its walls are located at specified distances from the building exterior in accordance with the prevailing Technical Requirements for Household Shelters. Typically, a HS is used as a storeroom in peacetime. The entrance to the HS is installed with light protective steel door that is approved under the Product Listing Scheme. The HS gives protection to the occupants against weapon effects such as blast and fragments during a National Emergency (NE).

2. A storey shelter (SS), which has the same level of protection as the HS, is in a common area for the protection of the residents of the dwelling units (i.e. not provided with HS) on that storey. The design of a SS is governed by the prevailing Technical Requirements for Storey Shelters. During peacetime, the SS may be used as a common facility for the residents of the storey. The other statutory requirements governing the design and use of the SS space for the specific peacetime use shall also be complied with. Residents shall not stay inside the SS during peacetime emergency situations such as a fire in a building.

1.2 Staircase Storey Shelters

3. Since July 2004, an alternative to the SS concept, which is to double up the enclosed mechanically ventilated exit staircase as a SS, was implemented. With staircase SS, it allows greater flexibility and better space optimisation in the design and layout of the residential development. The design of the staircase SS is also governed by the prevailing Technical Requirements for Storey Shelters.

4. This manual serves as a reference and guide for building owners and Management Corporations Strata Title (MCSTs) of residential developments that are provided with staircase SS within their premises. This manual aims to provide information and guidelines on the operations and maintenance requirements of staircase SS. This will enable building owners and MCSTs to adopt these guidelines in the management of the staircase SS in peacetime as well as when required for sheltering use in a NE.

5. The typical layout plans and sections of a staircase SS is as shown in **Annex A**. The staircase SS is an enclosed space with hardened walls, floors, landings, and doors. The staircase SS is mechanically ventilated for its peacetime usage. The SS walls at each storey are deemed as bounds of protection of the SS.

1.3 Operation & Maintenance Requirements

6. The CD Shelter Act 1997 requires that the building owner or management to be responsible in managing and maintaining the staircase SS in peacetime and during a NE. In this manual, the term building management (BM) refers to either the building owner¹ or the MCST, which comprises all the subsidiary proprietors or owners of units in the estate. The BM shall put in place a regular maintenance programme for the staircase SS to be maintained in accordance with specifications described in Chapter 4.

7. The BM may appoint a Managing Agent (MA) to oversee the management and maintenance of staircase SS compartments. The BM shall also put in place procedures to get the shelter ready for occupation and to manage the shelters in a NE. The guidelines for operation and management of the staircase SS will be detailed in following chapters of this manual. Please note that the information contained in this manual is only applicable to the operation and maintenance of staircase SS, and not to other storey shelters (SS) or household shelters (HS).

8. During a state of tension leading to a NE, SCDF will issue direction to the BM to appoint a Shelter Operation Manager (SOM), who holds overall responsibility for managing the conversion and operation of the staircase SS during a NE. The SOM shall preferably be a resident living in the estate, and is familiar with the operation of the CD fixtures of the staircase SS. Thereafter, the BM and SOM shall put in place a Shelter Management Plan (SMP) (refers to Chapter 2) on the allocation of the residents to their respective staircase SS compartments and the relevant occupation procedures by the residents during a NE.

1.4 Inspection by SCDF

9. A staircase SS can only be considered effective if its structure and CD fixtures are regularly maintained to the desired standards. The SCDF will conduct regular inspections of staircase SS in residential developments to ensure that the operational readiness of the staircase SS is maintained. Where defects or improper maintenance are detected, SCDF will issue instructions for the necessary rectifications or adjustments to be carried out, and re-inspections will be conducted to ensure that the rectification works are done.

¹ For public residential development, the building owner refers to Housing & Development Board (HDB)

Chapter 2: Management of Staircase Storey Shelters

2.1 Roles & Responsibilities

Staircase SS are common property in the estates. It is the responsibility of Building Management (BM) to manage and maintain staircase SS to the stipulated maintenance standards (refer to Chapter 4). On the maintenance of the staircase SS, the BM may appoint a MA to ensure the shelter fixtures are properly maintained and kept in working order. On the management of the staircase SS, upon direction given by SCDF (i.e. prior to a NE), the BM shall appoint a SOM to establish and implement the SMP (See Chapter 2). The SOM shall establish, maintain and update the shelter allocation plan. Every household in the residential estate shall be allocated a staircase SS compartment at the same floor.

2. In peacetime, the BM together with the MA should work together to ensure that activities/ tasks pertaining to shelter maintenance of the staircase SS according to the stipulated maintenance requirements (see Chapter 4) are carried out to ensure operational readiness. During a state of tension leading to a NE, the BM shall assess if mobile data connectivity is sufficient in the staircase SS compartments. When SCDF issues a notice to the BM to appoint the SOM and prepare the SMP, the BM shall activate the Fibre-Terminal Points in all the staircase SS compartments for internet connectivity, where required.

3. In a NE, the conversion and operation of staircase SS compartments (see Chapter 3) are to be overseen by the SOM, under the management of the BM. The SOM should ensure that the tasks pertaining to shelter management are implemented accordingly. This would include the conversion and operation of staircase SS compartments during a NE.

4. In general, the duties of SOM are:

- a. Formulate/update the SMP with assistance from the BM. Nonetheless, the BM and MCST are advised to prepare a draft SMP during peacetime;
- b. Train and educate the residents to be familiar with the tasks in converting the staircase storey shelter for occupation;
- c. Oversee the conversion and operation of staircase SS compartments, under the management of the BM; and
- d. Oversee the implementation of the maintenance and state of readiness of staircase SS.

5. When the need arises (e.g. prior to a NE), SCDF will embark on a programme to inform and prepare the public on the shelter protection measures including shelter occupation procedures, etc. Upon notification by SCDF, the SOM should commence conducting checks to ensure that the shelter fixtures are in good working conditions and to practise on the conversion and operations of the staircase SS for sheltering use (refer to Chapter 3 for details).

2.2 Shelter Management Plan

6. The Shelter Management Plan (SMP) is a document aimed at providing essential information to guide the BM and SOM in administering the management and maintenance of the staircase SS shelters. A sample format and supporting planning aids are provided below. The BM and SOM are encouraged to tailor these templates to suit estate-specific needs and keep them regularly updated as an integral part of the shelter management.

a. Building and Floor Layout Plans

A relevant set of building plans, clearly indicating the locations of all staircase SS, typical layout of SS compartments in the residential estate and the location of the mechanical ventilation systems and switches.

b. Identification of Staircase SS Compartments

The use of identification code for each staircase SS compartments is important in the management of the staircase SS operations and maintenance. A suggested format will be as follows:

- i. The apartment block name or number;
- ii. The storey level that the compartment is located on;
- iii. Identification code of staircase used by BM with the prefix of SS for Staircase SS;

For example, for a staircase SS labelled by the BM as Staircase 01 in an Apartment Block 321, its SS compartment at Level 9 may be designated as: B321/ 09/ SS(01)

B321 /	09 /	SS(01)
(Block No.)	(The level where SS compartment is located)	(Prefix for staircase shelter; code)

c. Shelter Allocation Plan

- i. The shelter allocation plan indicates the allocation of all dwelling units in the residential estate to the designated SS compartments. Details required in this plan include the block name or number, SS compartment identification code, and dwelling unit number. (See Annex C.)
- ii. Each dwelling unit should be allocated to an appropriate SS compartment, which is usually located on the same storey and situated within 40 metres from the entrance of an allocated dwelling unit. This would have been drawn up by the QP (Architect) during the building plans approval stage. The BM may obtain the information and materials from the QP (Architect) from the onset.

d. Conversion Guide

A set of the conversion guide for staircase SS can be found in Chapter 3 and **Annex B**.

e. Maintenance Records

All inspection and service reports, as required under the maintenance schedules in **Annex D**, shall be documented and included in the SMP as part of the official maintenance records for the staircase SS.

f. Others

Any other documents that the BM and SOM may find useful in managing the operation and maintenance of the staircase SS provided in the residential estate.

Chapter 3: Shelter Operations and Management

During peacetime, the SS may be used as a common facility for the residents of the storey. Where the staircase or scissor-staircase doubles up as a SS, it is used as a fire exit staircase. The SCDF may, during the state of emergency, serve a notice on the BM, management corporation, subsidiary management corporation, or Town council (as the case may be), to require the preparation of the SS, within the period specified in the notice, for occupation by persons needing to take refuge in the shelter.

3.1 Shelter Occupation Procedures

2. Shelter operation in times of emergency comprises 7 main stages as follows:
 - a. Stage 1: Conversion Phase
 - b. Stage 2: Standby Phase
 - c. Stage 3: Moving-In Phase
 - d. Stage 4: Stay-In Phase
 - e. Stage 5: Dispersal Phase
 - f. Stage 6: Restoration Phase
 - g. Stage 7: Recovery Phase
3. The detailed activities and tasks to be carried out in each phase of shelter operation are described in the following paragraphs.

Stage 1: Conversion Phase

4. Upon being informed by the SCDF (48 hours' notice in advance will be given prior to a NE), the staircase SS compartments are to be converted from Normal Mode (i.e. usage as staircase) to Civil Defence (CD) Mode (i.e. usage as shelter) against imminent threats.
5. The tasks of converting staircase SS from Normal Mode to CD Mode shall be completed within 48 hours. It shall be led by the BM & SOM and supported by the residents of the development.
6. In the conversion phase, the SOM oversees and co-ordinate activities depicted in Paragraph 7 of this chapter. The residents shall participate and carry out the conversion of their respective SS compartments.
7. The following tasks shall be carried out during the conversion phase:
 - a. To remove all the MV grilles within the SS compartments and switch off the mechanical ventilation system. To close all the vertical blast hatches located in all SS compartments.
 - b. To close and seal fragmentation plates over the two ventilation sleeves (VS) found in every SS compartment using simple hand tools (if VS is found to be in open position).

- c. To remove door kerb from the top of the SS door frame and install the door kerb onto the bottom of the door frame for 2 internal and 1 entrance SS doors of every SS compartment (refer to **Annex B** for the detailed steps). The internal and entrance SS doors are to be kept open.
- d. To put in the FTP modem and ascertain that there is broadband/ WIFI connectivity² at the FTP and to ensure that basic communication means (such as portable radio set and mobile devices) are available to obtain broadcast information. The provision of internet broadband access via FTP is optional if BM assessed during the pre-warning period that mobile data connectivity is sufficient in the staircase SS compartments.

Stage 2: Standby Phase

8. The Public Warning System (PWS) is a network of sirens installed by the SCDF at strategic points across Singapore to alert the public of imminent threats that may endanger lives and property. **Table 1** shows the different signals and what residents should do when they hear them. The SCDF will also make appropriate announcements via TV and radio during the emergency period. The residents should be paying attention to the sounding of PWS on any impending threat.

PWS Signal	How It Sounds	Situation	What It Means
Alarm	Wailing blasts	An air raid or danger is approaching.	Move to the allocated staircase SS compartment immediately.
All Clear	Continuous blasts	The threat is over.	Leave the staircase SS in an orderly manner.
Important Message	Pulsating blasts	An 'Important Message' broadcast will be aired via the local free-to-air radio and TV stations.	Tune in to any local free-to-air FM radio stations and TV stations immediately.

Table 1: Public Warning System Signals

9. The converted staircase SS compartments provided shall be ready prior to the sounding of "Alarm" signal for occupation by the residents. Upon hearing the "Alarm" signal via PWS or being informed of an imminent threat via TV channels and/or radio broadcasts, the residents should move swiftly into the designated shelter compartment.

² The BM/MA/SOM should inform the residents of the WIFI password to access WIFI signals.

Stage 3: Moving-In Phase

10. The following sequential actions shall be adhered to when moving in to occupy the staircase SS.
- a. To close and lock the internal SS door (i.e. door handle to be in Civil Defence (CD) Mode) within the SS compartment.
 - b. To close the entrance SS door (in CD Mode) when all residents have entered the SS.
 - c. Fill up the innermost areas of a SS compartment first. Family members are to stay together in a group. Assist anyone who is having difficulty in accessing the staircase SS.

Stage 4: Stay-In Phase

11. The shelter occupation period may last up to a few hours. The residents shall stay inside the staircase SS and tune in to the free-to-air TV/radio broadcast for important messages or instructions issued by the authorities.
- a. If there is a need for medical evacuation arise, call 999 or 995 for immediate assistance.

Stage 5: Dispersal Phase

12. Upon hearing the “All-Clear” signal or being informed that the threat is over via TV and/or radio broadcasts, the residents shall open the internal and entrance SS doors carefully and return to their respective dwelling units in an orderly manner.

Stage 6: Restoration Phase

13. The BM and SOM shall check for any visible damages to the storey shelter. The entrance SS doors as well as the internal SS doors for staircase storey shelters shall be kept open for subsequent occupation, if any.
14. SOM may organise an after-action review on lessons learnt and improvements to be made in preparation for subsequent operation, if need be.

Stage 7: Recovery Phase

15. Once instruction is given by the relevant authority that the emergency period is over and that there is no longer the need for shelter occupation, the staircase SS can be reverted to its normal usage. The following actions are to be adhered to.

- a. Ensure the internal and entrance SS doors are fully open to allow the normal usage of the staircase.
- b. Loosen the 5 long screws for every removable door kerb and affix it back to the top of the SS door frame using the same long screws. Affix the original 5 short screws back to the bottom of each SS door frame.
- c. Open all blast hatches of the MV shaft / duct. Re-install MV grilles in all SS compartments. Close the fragmentation plates of the two ventilation sleeves (VS) found in each SS compartment, as in normal usage mode. Switch on the mechanical ventilation system.
- d. Switch off and remove portable radio sets and FTP modem from all SS compartments.

Chapter 4: Maintenance Requirements

4.1 Maintenance of Staircase SS

The CD Shelter Act 1997 states that owners or occupiers of shelters are responsible to maintain the shelters according to prevailing regulations. This chapter specifies the basic minimum maintenance standards for the staircase SS. Dual-purpose equipment / fixtures used in the staircase SS should adhere to the requirements as spelt out in the manufacturers' or suppliers' operation and maintenance specifications.

4.2 Scope and Schedule of Works

2. This chapter covers the scope, the minimum maintenance standards and schedule for the following provisions of the staircase SS:
 - a. Structural Components;
 - b. Storey Shelter Blast Doors;
 - c. Mechanical Ventilation Blast Hatches;
 - d. Mechanical Ventilation System;
 - e. Ventilation Sleeves;
 - f. Other Fixtures
3. The details are given in the Maintenance Requirements for Staircase Storey Shelters (**Annex D**).
4. A staircase SS can only be operationally ready if the entire facility is well maintained during peacetime. The following maintenance guidelines shall be always observed by the BM:
 - a. Periodic inspections are to be carried out by trained maintenance personnel, under the supervision of the BM.
 - b. Durations between inspections are as indicated in the maintenance schedules found in **Annex D** and these may vary from item to item.
 - c. For certain equipment/fixtures, a functional check is required in addition to the visual inspection.
 - d. Inspection and service reports shall be endorsed by the Building Management representative. Such reports shall be properly kept for record and inspection purposes.

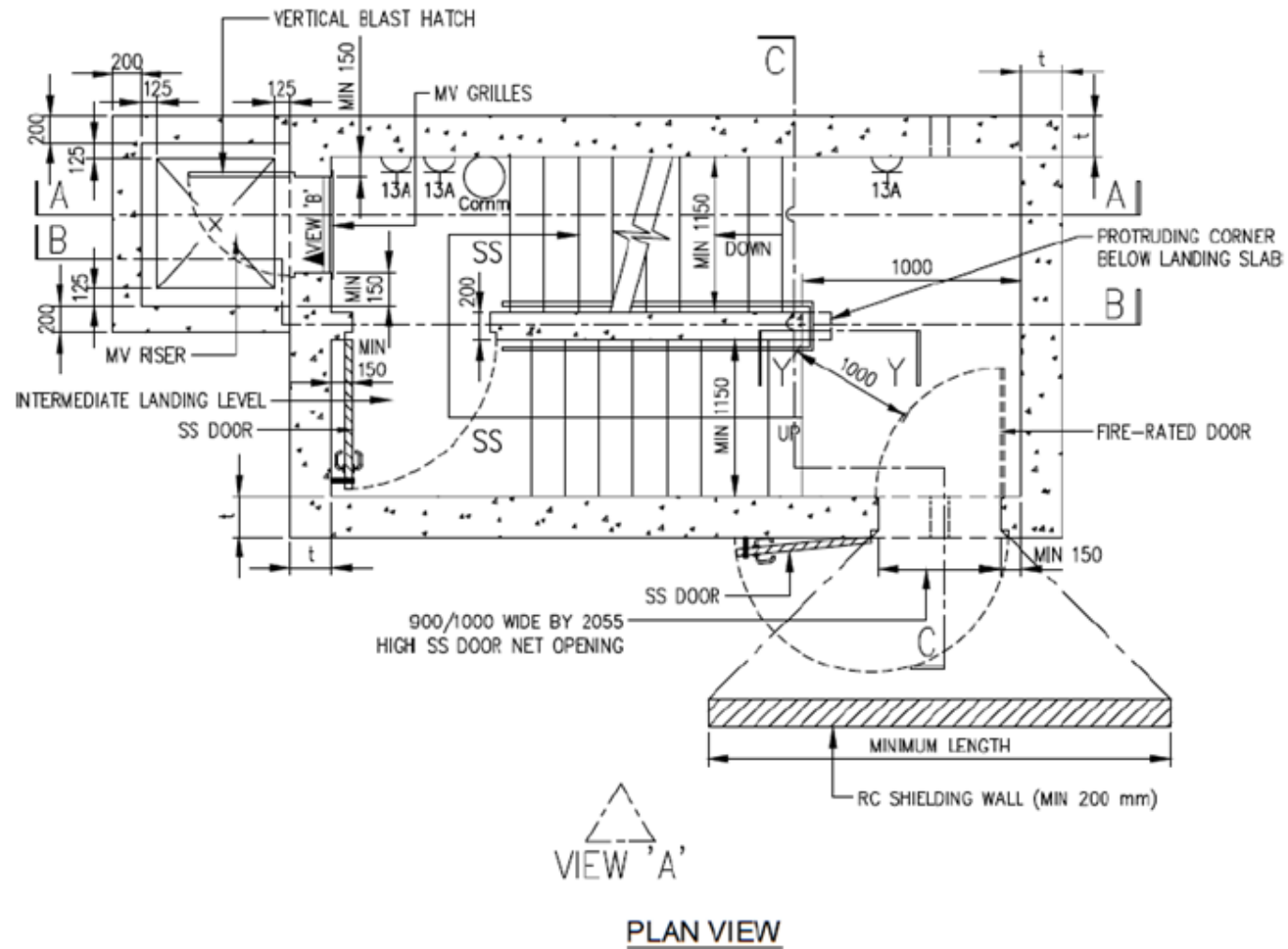


Figure 1 – Typical Plan of a Staircase Storey Shelter

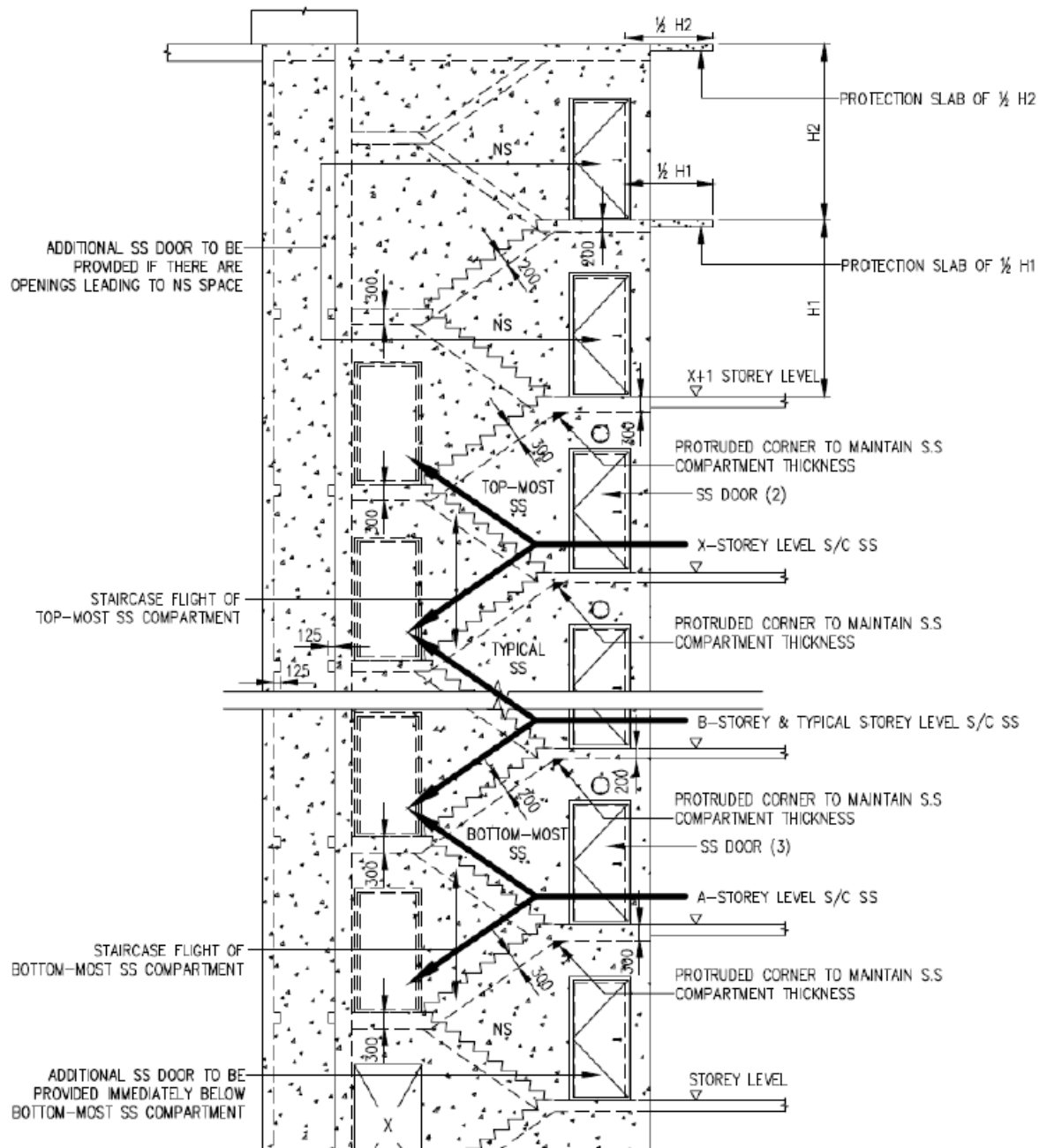
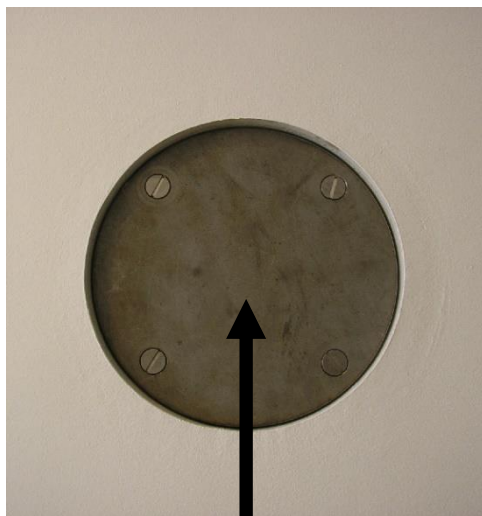
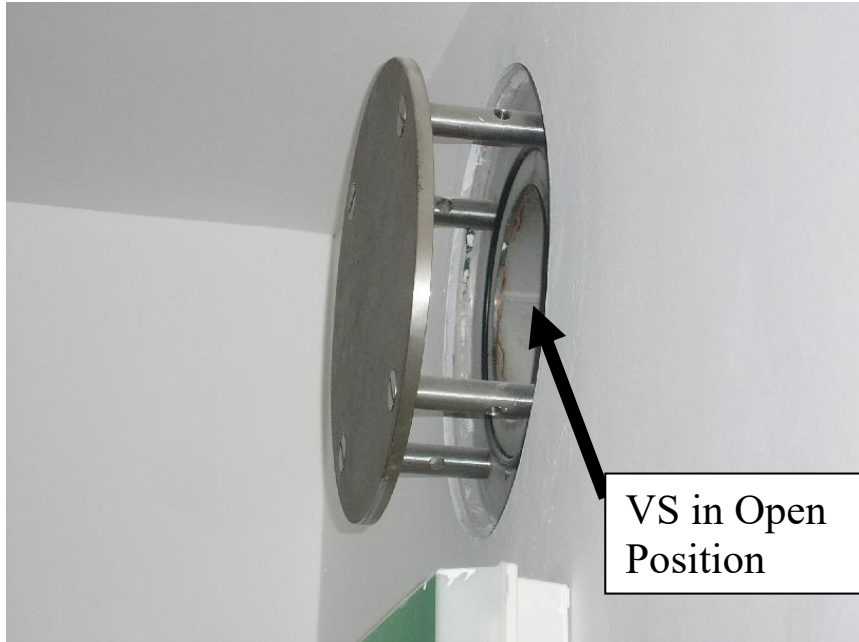


Figure 2 –Typical Section of a Staircase Storey Shelter

Conversion of Staircase SS from Normal Mode to CD Mode

Step 1: Close and seal fragmentation plates over the two ventilation sleeves (VS) found in every SS compartment using simple hand tools (if VS is in open mode).



External Face of VS
in Closed Position



Internal Face of VS
in Closed Position

Step 2:

a) Remove the 5 short screws from the bottom of the SS door frame.



b) Remove the 5 long screws which are used to attach the SS door kerb to the top of the SS door frame during peacetime.



c) Place the SS door kerb at the bottom of the door frame. Use the 5 long screws to affix the SS door kerb to the SS door frame.



Affix door kerb on bottom of SS door frame by using the 5 long screws.



d) Install the 5 short screws onto the top of the door frame



e) Carry out the steps at 2 internal and 1 entrance SS doors of every SS compartment.

Step 3: Set up portable radio set and install the FTP modem in every SS compartment.

Remarks: The provision of internet broadband access via FTP is optional if BM assessed during the pre-warning period that mobile data connectivity is sufficient in the staircase SS compartments



SHELTER ALLOCATION PLAN**(Sample)**

Updated On: _____

A 5-Storey Low-Rise Residential Estate Comprising 2 Blocks (Blocks 10 & 11) with 2 Staircase Storey Shelter Towers in Each Block and 10 Dwelling Units on Every Storey.

Block Name / No.	Storey Level	Staircase SS Compartment(s)	Allocated Dwelling Unit No.
10	1 st	<i>B10/01/SS(A)</i>	#01-01 to #01-05
		<i>B10/01/SS(B)</i>	#01-06 to #01-10
	2 nd	<i>B10/02/SS(A)</i>	#02-01 to #02-05
		<i>B10/02/SS(B)</i>	#02-06 to #02-10
	3 rd	<i>B10/03/SS(A)</i>	#03-01 to #03-05
		<i>B10/03/SS(B)</i>	#03-06 to #03-10
	4 th	<i>B10/04/SS(A)</i>	#04-01 to #04-05
		<i>B10/04/SS(B)</i>	#04-06 to #04-10
	5 th	<i>B10/05/SS(A)</i>	#05-01 to #05-05
		<i>B10/05/SS(B)</i>	#05-06 to #05-10
11	1 st	<i>B11/01/SS(C)</i>	#01-11 to #01-15
		<i>B11/01/SS(D)</i>	#01-16 to #01-20
	2 nd	<i>B11/02/SS(C)</i>	#02-11 to #02-15
		<i>B11/02/SS(D)</i>	#02-16 to #02-20
	3 rd	<i>B11/03/SS(C)</i>	#03-11 to #03-15
		<i>B11/03/SS(D)</i>	#03-16 to #03-20
	4 th	<i>B11/04/SS(C)</i>	#04-11 to #04-15
		<i>B11/04/SS(D)</i>	#04-16 to #04-20
	5 th	<i>B11/05/SS(C)</i>	#05-11 to #05-15
		<i>B11/05/SS(D)</i>	#05-16 to #05-20

Introductory Notes

1. These requirements stipulate preventive maintenance measures to be carried out for the staircase storey shelters.
2. Maintenance activities shall be conducted in accordance with the frequency of maintenance stipulated.
3. Inspection and service reports shall be endorsed by the Building Management representative. Such reports shall be properly kept for record and inspection purposes.

SCHEDULE OF MAINTENANCE FOR STRUCTURAL COMPONENTS

The following items are to be checked and maintained at the intervals stated:

1. <u>REINFORCED CONCRETE WALLS, STAIRCASE FLIGHTS / LANDINGS / ROOF / UPPER ROOF SLABS</u>	FREQUENCY			
	M	Q	½ Y	Y
a) Visual checks for cracks and seepage (e.g. open cracks with crack width more than 1mm). All causes of cracks and seepage must be investigated, and remedial must be proposed and carried out with the approval of BCA. In case of crack widths more than 2mm, the nature of the cracks must be investigated. Surface cracks are of no concern. Cracking over the entire wall/slab thickness must be closed by suitable means (e.g. pressure grouting). Remedial works are to be carried out by a specialist with the approval of BCA.			X	
b) Visual checks for corrosion of reinforcement under the concrete cover. Reinforcement affected by corrosion shall be suitably treated and protected.			X	
c) Visual checks for unauthorized openings in the staircase SS structure. Only two ventilation sleeves and one opening for mechanical ventilation shaft are allowed for every SS compartment.			X	
d) Visual checks for cracks and seepage in upper roof slab protecting the intake point of the MV shaft, if applicable.			X	

Notes:-

M – Monthly

Q – Quarterly

½ Y – Half Yearly

Y – Yearly

2. <u>REINFORCED CONCRETE SHIELDING WALL</u>	FREQUENCY			
	M	Q	½ Y	Y
a) Visual checks on the entire RC shielding wall in front of the entrance SS door for cracks, which could impair the structural safety and/or gas tightness. In case of crack widths more than 2mm, the nature of the cracks must be investigated. Surface cracks are of no concern. Cracks over the entire wall/slab thickness must be closed by suitable means (e.g. pressure grouting). Remedial works are to be carried out by a specialist with the approval of BCA.			X	
b) Visual checks for corrosion of reinforcement under concrete cover.			X	
3. <u>SETBACK PROVISIONS</u>				
a) Check to ensure that provision of reinforced concrete floor slabs, trellises and other structures as setback distance are in accordance with approved shelter plans and/or waiver decision letters.			X	
b) Check for unauthorised works that can adversely affect setback distance in terms of reduced protection level. Any reduction in protection level must either be rectified to meet original provisions in the approved shelter plans or approved by the relevant authorities (SCDF and/or BCA).			X	

Notes:-

M – Monthly

Q – Quarterly

½ Y – Half Yearly

Y – Yearly

**SCHEDULE OF MAINTENANCE FOR STAIRCASE STOREY SHELTER
(S/C SS) BLAST DOORS & REMOVABLE DOOR KERBS**

The following items are to be checked and maintained at the intervals stated:

4. <u>ENTRANCE & INTERNAL SS DOORS</u>	FREQUENCY			
	M	Q	½ Y	Y
a) Repair or replace any distorted or damaged parts of door as such parts will impair the operation and function of the door. Check and repair any damaged welds if necessary.			X	
b) Remove all rust from corroded areas, prepare and touch-up with approved paint/coating. Any parts of the locking mechanism affected by rust shall be appropriately treated and re-galvanised.			X	
c) Check the condition of hinges by closing and opening door completely. Replace any worn-out or misaligned hinges. Clean and grease the lock set, dismantle and adjust if necessary.			X	
d) Replace damaged or missing rubber seals. Loose seals are to be glued into the retainer. Check tightness of seal all around by applying chalk to the seal angle before closing the door. In case of discontinuous chalk marks, the seal is to be replaced until the chalk mark is continuous. The chalk test shall be applied to all protective doors and hatches with rubber gaskets. Material used for seal shall be of continuous skinned closed cell form expanded neoprene or EPDM rubber which meets the requirements of ASTM D1056.			X	

Notes:-

M – Monthly

Q – Quarterly

½ Y – Half Yearly

Y – Yearly

5. <u>REMOVABLE DOOR KERBS OF SS DOORS</u>	FREQUENCY			
	M	Q	½ Y	Y
a) Visual checks for any distorted or damaged parts of the removable door kerb as such parts will impair the operation and function of the entire door.			X	
b) Remove all rust from corroded areas, prepare and touch-up with approved paint/coating.			X	
c) Check the alignment and fit of the door kerb by installing it onto the bottom of the door frame using screws, before closing and locking the door.			X	
d) Replace or repair damaged or missing rubber seal that is installed within the door kerb. Any loose seal has to be glued into the door kerb. Check and replace the seal if it is deformed, deteriorated, hardened or loss of resiliency. Splice joint shall be formed for joining up the seal, and the entire bottom face of seal shall be bonded into the holder with adequate and appropriate adhesive. Material used for seal shall be of continuous skinned closed cell form expanded neoprene or EPDM rubber which meets the requirements of ASTM D1056.			X	

Notes:-

M – Monthly

Q – Quarterly

½ Y – Half Yearly

Y – Yearly

**SCHEDULE OF MAINTENANCE FOR MECHANICAL VENTILATION
(MV) BLAST HATCHES**

The following items are to be checked and maintained at the intervals stated:

6. <u>MECHANICAL VENTILATION BLAST HATCHES</u>	FREQUENCY			
	M	Q	½ Y	Y
a) Repair or replace any distorted or damaged parts of blast hatch as such parts will impair the operation and function of the blast hatch. Check and repair any damaged welds if necessary.			X	
b) Remove all rust from corroded areas, prepare and touch-up with approved paint/coating. The locking mechanism shall be re-galvanized.			X	
c) Check the condition of hinges by closing and opening blast hatch fully.			X	
d) Check and replace the seal if it is deformed, deteriorating, hardened or loss of resiliency. Splice joint shall be formed for joining up the seal and the entire bottom face of seal shall be bonded into the holder with adequate and appropriate adhesive. Material used for seal shall be continuous skinned closed cell form expanded neoprene or EPDM rubber which meets the requirements of ASTM D1056.			X	
e) Clean and grease the lock set, dismantle and adjust if necessary.			X	
f) Inspect and tighten all the bolts and nuts to the required torque if necessary.			X	

Notes:-

M – Monthly

Q – Quarterly

½ Y – Half Yearly

Y – Yearly

SCHEDULE OF MAINTENANCE FOR VENTILATION SLEEVES

The following items are to be checked and maintained at the intervals stated:

7. <u>VENTILATION SLEEVES ON SS WALLS</u>	FREQUENCY			
	M	Q	½ Y	Y
a) Check and repair any distorted or damaged parts of the ventilation sleeves as such parts will impair airtightness of the staircase SS compartment. The 150mm wide openings through the wall(s) must not be obstructed.			X	
b) Remove all rust from corroded areas, prepare and touch-up with approved coating or paint. All moving mechanisms shall be re-galvanised.			X	
c) Check the condition of all 12mm stainless steel bolts and threaded holes by closing the 10 mm thick fragmentation plate completely, before opening it again. Replace damaged or missing steel bolts, if the fragmentation plate cannot be closed properly.			X	
d) Check that at least 50 mm of unobstructed clear space is available around the ventilation sleeve, and at least 500 mm in front of the fragmentation plate. Every ventilation sleeve must be easily accessible for maintenance and operation purposes.			X	

Notes:-

M – Monthly

Q – Quarterly

½ Y – Half Yearly

Y – Yearly

SCHEDULE OF MAINTENANCE FOR OTHER FIXTURES

The following items are to be checked and maintained at the intervals stated:

8. <u>ELECTRICAL & COMMUNICATION FIXTURES</u>	FREQUENCY			
	M	Q	½ Y	Y
a) Check for proper operation of all electrical and communication fixtures including light fittings, socket outlets, FTP , etc. Rectify or replace as necessary.			X	

Notes:-

M – Monthly

Q – Quarterly

½ Y – Half Yearly

Y – Yearly