

**SINGAPORE CIVIL DEFENCE FORCE
FIRE SAFETY & SHELTER DEPARTMENT
HQ SCDF, 91 Ubi Ave 4 Singapore 408827 Fax: 68481493
Website: [http://: www.scdf.gov.sg](http://www.scdf.gov.sg)**



Please quote our ref. no. in all future correspondences

Our File Ref: CD/FSSB/12/01/03/04

DID: 68481470

FAX: 68481493

13 Oct 2005

President, Singapore Institute of Architects (SIA)
President, Institution of Engineers, Singapore (IES)
President, Association of Consulting Engineers, Singapore (ACES)
President, Real Estates Development Association of Singapore (REDAS)
Registrar, Board of Architects (BOA)
Registrar, Professional Engineers Board (PEB)

Dear Sir/Mdm,

**REVISION TO TECHNICAL REQUIREMENT FOR HOUSEHOLD SHELTER –
SETBACK DISTANCE OF HOUSEHOLD SHELTER WALLS**

Recently, SCDF undertook a study with a protective structure consultant on the setback distance requirements of the Household Shelter, including the conduct of a series of full scale blast tests on an off-shore island to validate the findings of the study. Based on the results of the study, SCDF and BCA reviewed and revised the setback distance requirements for the Household Shelter.

2 The respective clauses, tables and figures in the Technical Requirements for Household Shelters 2001 have been revised and superseded by **Annex A, Annex B** and **Annex C** respectively. This takes immediate effect.

3 We would appreciate it if you could disseminate the contents of this circular to members of your Institution or Association.

4 Please contact undersigned at 68481470 or Maj Ng Shu Herng at 68481406, should you require further clarifications.

Yours faithfully,

(Transmitted via e-mail)

Cpt Yoong Eng Chee
SO Shelter Development
for Commissioner, Singapore Civil Defence Force

cc

Members of FSSD Standing Committee

President, SISV

CEO, HDB
Attn: Mr Lau Joo Ming

CEO, URA

CEO, BCA
Attn: Deputy CEO (Building Control)
Director (Special Functions)
Senior Manager (CDSD)
Senior Engineer (CDSD)

2.3.3 Setback Distances of HS Walls (Without Reinforced Concrete Down-hang Beams along EBL)

- (a) The HS walls shall be located at minimum setback distances from the EBL (See FIGURE 2.3.3(a) and FIGURE 2.3.3(b)). The setback distances of the HS in a dwelling unit shall comply with TABLE 2.3.3.
- (b) Where the storey height of a HS on the first storey is greater than the storey heights of other HS above it, the minimum setback distances of the HS on the first storey shall be at least the same as the setback distances of the HS above it.
- (c) For HS walls (where the HS door is not located), trellis constructed of RC or steel hollow section may be used to make up for the shortfall in setback distance. However, a minimum 1000 mm RC ceiling slab from the HS wall shall be provided (see FIGURE 2.9). A perpendicular or parallel trellis arrangement, or a combination of both, with respect to the HS wall concerned, shall comply with the geometrical configuration as shown in FIGURE 2.9.

2.3.4 Setback Distances of HS Walls (With Reinforced Concrete Down-hang Beams along EBL)

- (a) Where down-hang beams are provided along the EBL in front of HS walls, the minimum setback distance of these HS walls can be reduced based on the effective storey height and in accordance with TABLE 2.3.4 (a). The effective storey height is determined by the storey height less the depth 'd' of the down-hang beam (See FIGURE 2.3.4). If a down-hang beam is also provided along the EBL in front of the HS wall with HS door, the setback distance of this wall shall be in accordance with TABLE 2.3.4 (b). Otherwise, it shall be in accordance with TABLE 2.3.3.
- (b) For HS walls (where the HS door is not located), trellis constructed of RC or steel hollow section may be used to make up for the shortfall in setback distance. However, a minimum 1000 mm RC ceiling slab from the HS wall shall be provided (see FIGURE 2.9). A perpendicular or parallel trellis arrangement, or a combination of both, with respect to the HS wall concerned, shall comply with the geometrical configuration as shown in FIGURE 2.9.

- (c) The setback distances of the HS on the first storey (where its storey height is greater than the storey height of the HS directly above it) shall be at least the same as the setback distances of the HS directly above it provided a down-hang beam of dimensions not less than those provided at the 2nd storey ceiling slab is provided at the 1st storey ceiling slab.
- (d) Clause 2.3.4 shall apply only if the width of the reinforced concrete down-hang beam is at least 125 mm.

2.3.5 Setback Distances of Basement HS Walls

- (a) There is no setback distance requirement for basement HS wall (See FIGURE 2.3.5 (a) and FIGURE 2.3.5 (b)) if the wall is:
 - (i) in direct contact with earth throughout its full height; or
 - (ii) facing a reinforced concrete basement storey wall in direct contact with earth throughout its full height; or
 - (iii) facing a reinforced concrete basement storey wall without full-height earth backing and with no openings within the influence zone, subject to a minimum clear distance of 800mm between the external faces of these two walls.
- (b) The minimum setback distances for the basement HS wall (See FIGURE 2.3.5 (a) and FIGURE 2.3.5 (b)) shall be in accordance with TABLE 2.3.5 if the HS wall faces a reinforced concrete basement storey wall with opening within the influence zone.

TABLE 2.3.3: MINIMUM SETBACK DISTANCES OF HS WALLS WITHOUT REINFORCED CONCRETE DOWN-HANG BEAM ALONG EBL

Storey Height (mm)	Setback Distance of HS Wall with HS door (mm)	Setback Distance of HS Walls without HS door (mm)
Column (1)	Column (2)	Column (3)
$2500 \leq Ht \leq 2800$	2750	2000
$2800 < Ht \leq 3100$	2900	2200
$3100 < Ht \leq 3500$	3100	2500
$3500 < Ht \leq 4000$	3300	2700
$4000 < Ht \leq 4500$	3600	2900
$4500 < Ht \leq 5000$	3850	3150
$5000 < Ht \leq 5500$	4100	3400
$5500 < Ht \leq 6000$	4300	3600
$6000 < Ht \leq 6500$	4550	3850
$6500 < Ht \leq 7000$	4800	4100
$7000 < Ht \leq 7500$	5000	4300
$7500 < Ht \leq 8000$	5250	4550

TABLE 2.3.4 (a): MINIMUM SETBACK DISTANCES OF HS WALLS WITH REINFORCED CONCRETE DOWN-HANG BEAM ALONG EBL

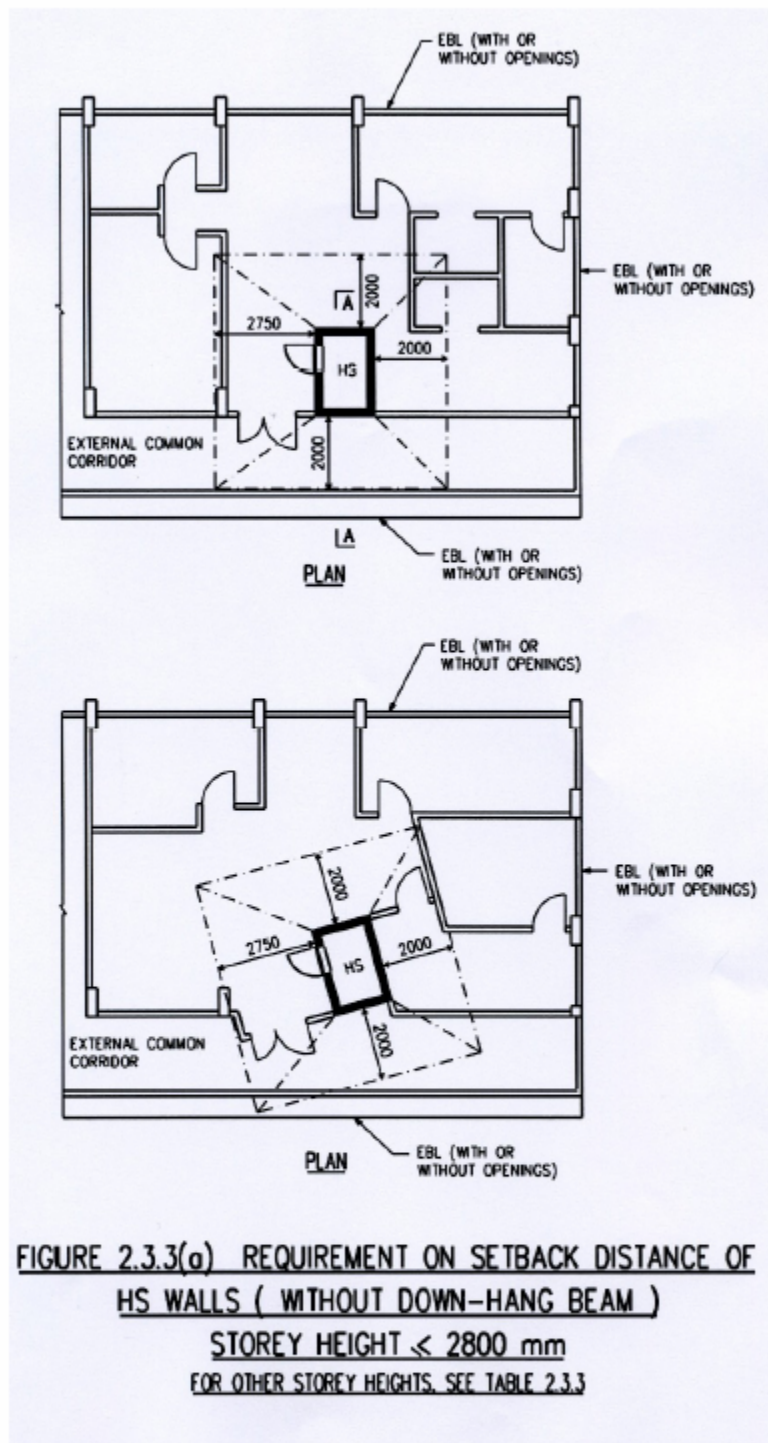
Effective Storey Height (mm) Column (1)	Setback Distance of HS Wall (mm) Column (2)
$H_t \leq 2200$	1800
$2200 < H_t \leq 2800$	2000
$2800 < H_t \leq 3100$	2200
$3100 < H_t \leq 3500$	2500
$3500 < H_t \leq 4000$	2700
$4000 < H_t \leq 4500$	2900
$4500 < H_t \leq 5000$	3150
$5000 < H_t \leq 5500$	3400
$5500 < H_t \leq 6000$	3600
$6000 < H_t \leq 6500$	3850
$6500 < H_t \leq 7000$	4100
$7000 < H_t \leq 7500$	4300
$7500 < H_t \leq 8000$	4550

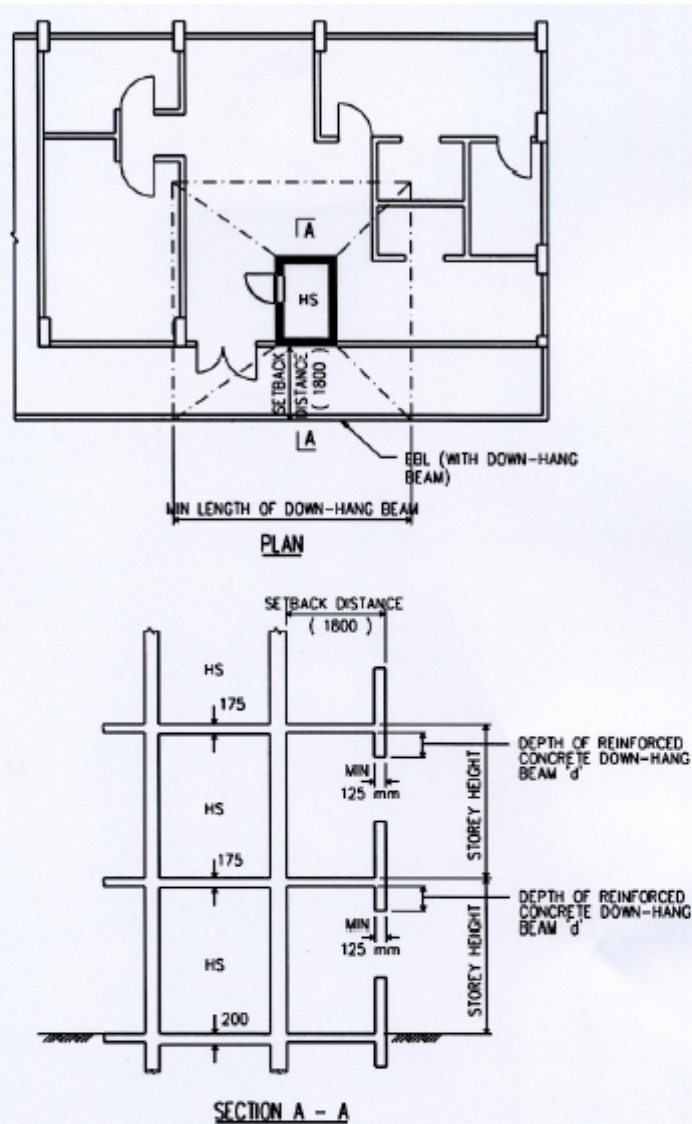
TABLE 2.3.4 (b): MINIMUM SETBACK DISTANCES OF HS WALL WITH HS DOOR, AND REINFORCED CONCRETE DOWN-HANG BEAM ALONG EBL

Effective Storey Height (mm) Column (1)	Setback Distance of HS Wall with HS Door (mm) Column (2)
$H_t \leq 2800$	2750
$2800 < H_t \leq 3100$	2900
$3100 < H_t \leq 3500$	3100
$3500 < H_t \leq 4000$	3300
$4000 < H_t \leq 4500$	3600
$4500 < H_t \leq 5000$	3850
$5000 < H_t \leq 5500$	4100
$5500 < H_t \leq 6000$	4300
$6000 < H_t \leq 6500$	4550
$6500 < H_t \leq 7000$	4800
$7000 < H_t \leq 7500$	5000
$7500 < H_t \leq 8000$	5250

TABLE 2.3.5: MINIMUM SETBACK DISTANCES OF BASEMENT HS WALLS (FACING REINFORCED CONCRETE BASEMENT STOREY WALLS WITH OPENING)

Storey Height (mm) Column (1)	Setback Distance of HS Walls without HS Door (mm) Column(2)	Setback Distance of HS Walls with HS Door (mm) Column(3)
$2500 \leq Ht \leq 2800$	2000	2750
$2800 < Ht \leq 3100$	2200	2900
$3100 < Ht \leq 3500$	2500	3100
$3500 < Ht \leq 4000$	2700	3300
$4000 < Ht \leq 4500$	2900	3600
$4500 < Ht \leq 5000$	3150	3850
$5000 < Ht \leq 5500$	3400	4100
$5500 < Ht \leq 6000$	3600	4300
$6000 < Ht \leq 6500$	3850	4550
$6500 < Ht \leq 7000$	4100	4800
$7000 < Ht \leq 7500$	4300	5000
$7500 < Ht \leq 8000$	4550	5250

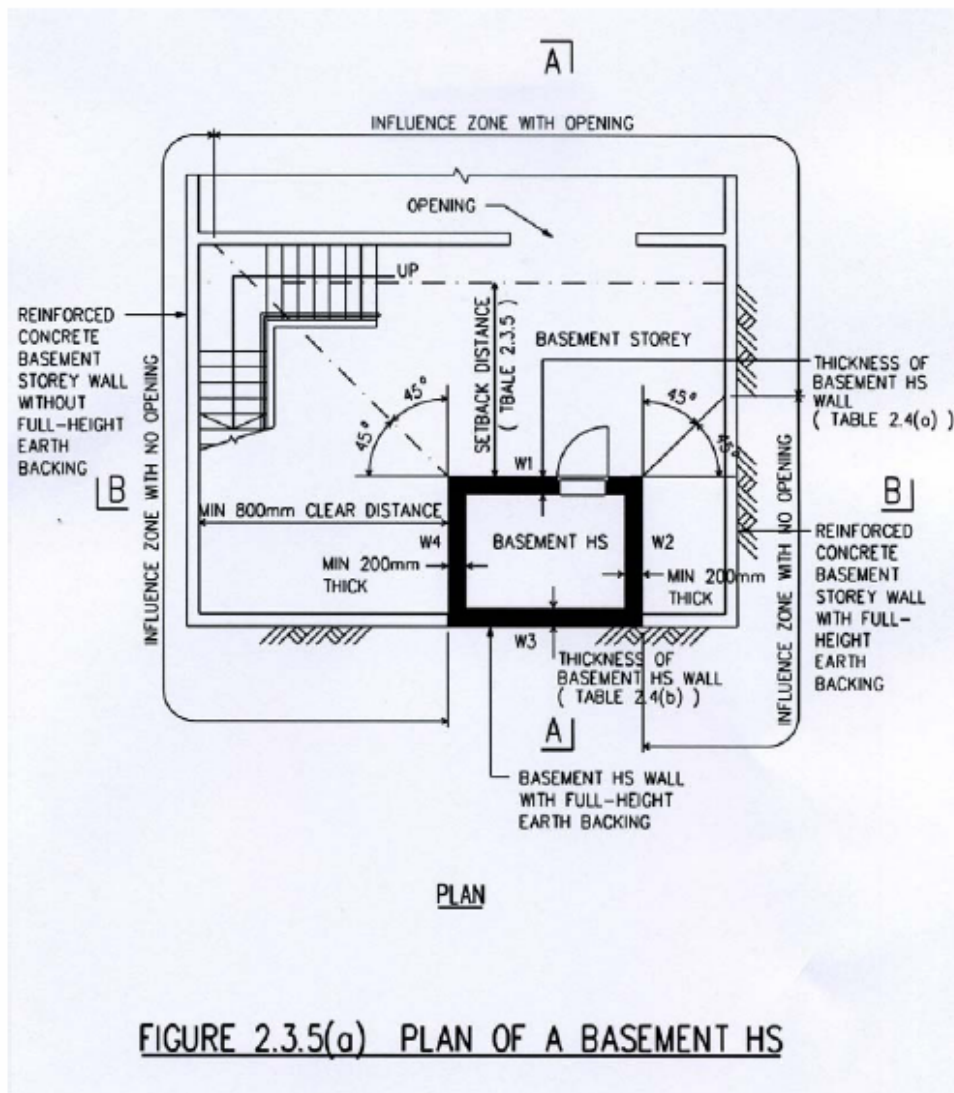




**FIGURE 2.3.4 REQUIREMENT ON SETBACK DISTANCE OF
HS WALLS (WITH DOWN-HANG BEAM)**

EFFECTIVE STOREY HEIGHT < 2200 mm

FOR OTHER EFFECTIVE STOREY HEIGHTS, SEE TABLE 2.3.4(a), 2.3.4(b)
(EFFECTIVE STOREY HEIGHT = STOREY HEIGHT - DEPTH 'd' OF DOWNHANG BEAM)



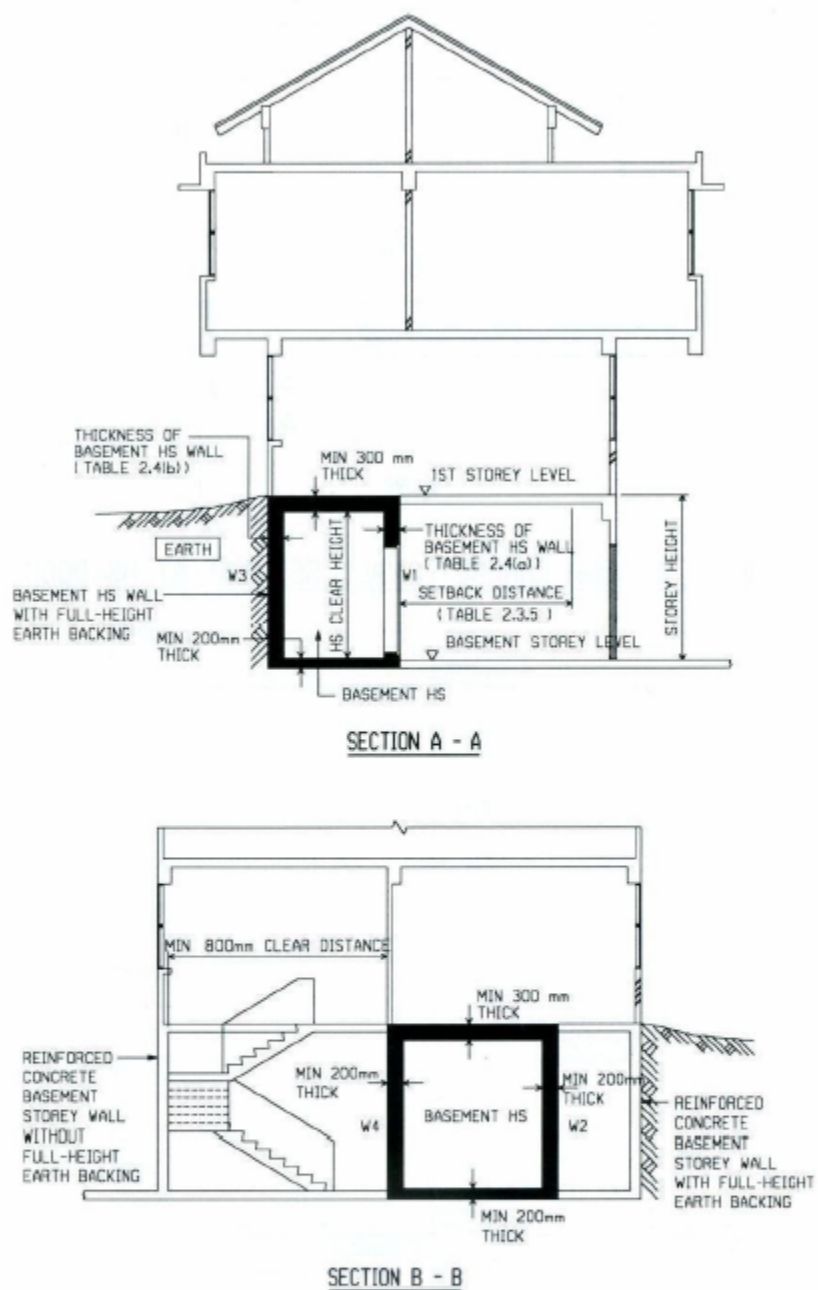
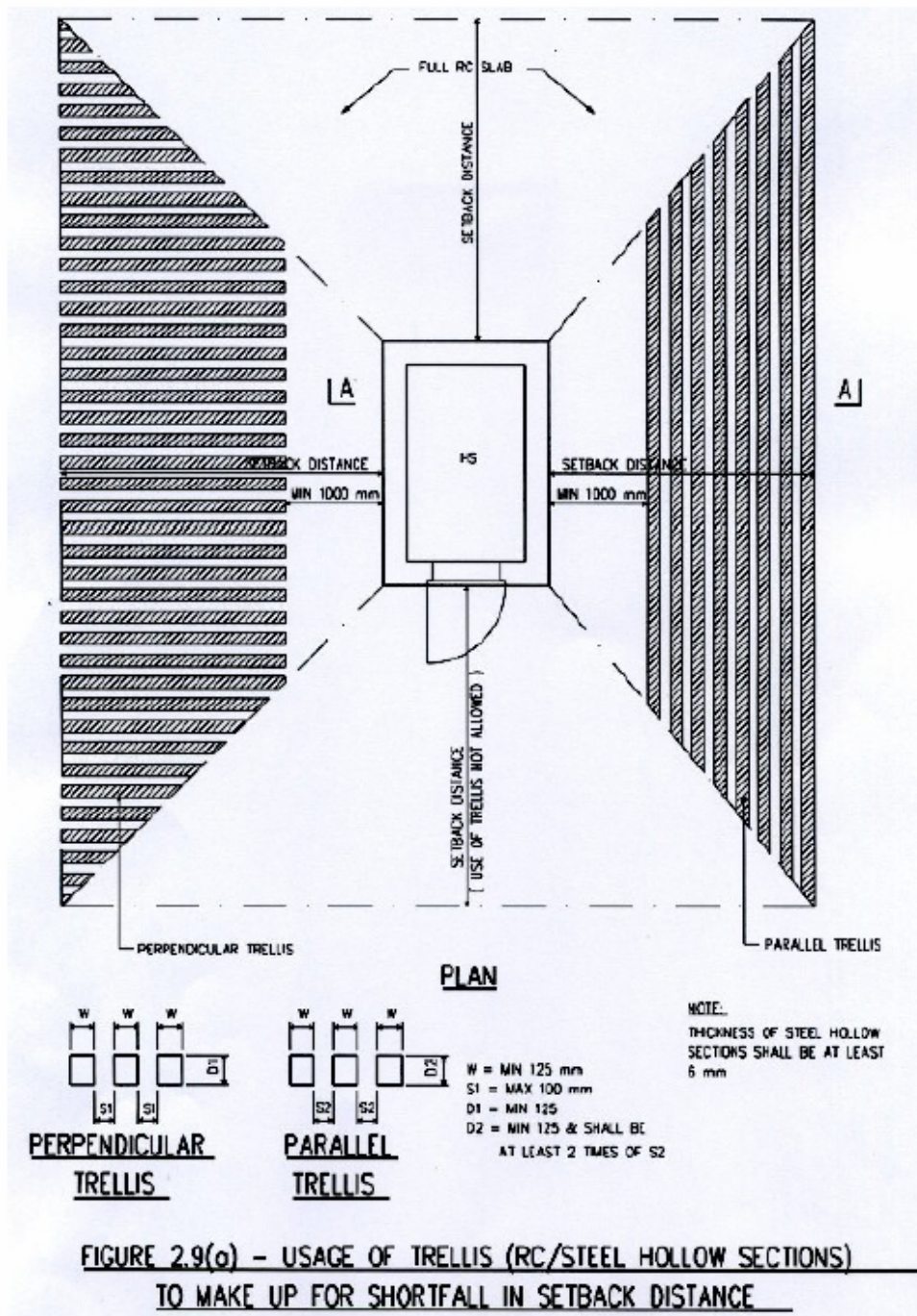


FIGURE 2.3.5(b) SECTIONAL VIEW OF A BASEMENT HS



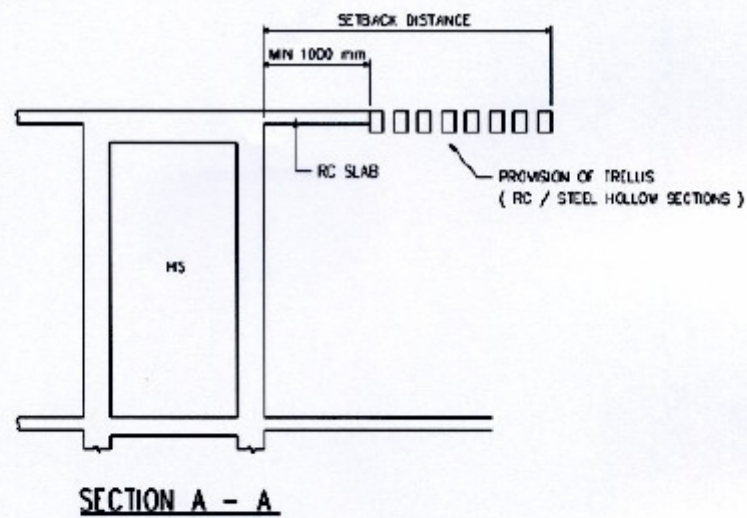


FIGURE 2.9(b) - USAGE OF TRELLIS (RC/STEEL HOLLOW SECTIONS)
TO MAKE UP FOR SHORTFALL IN SETBACK DISTANCE

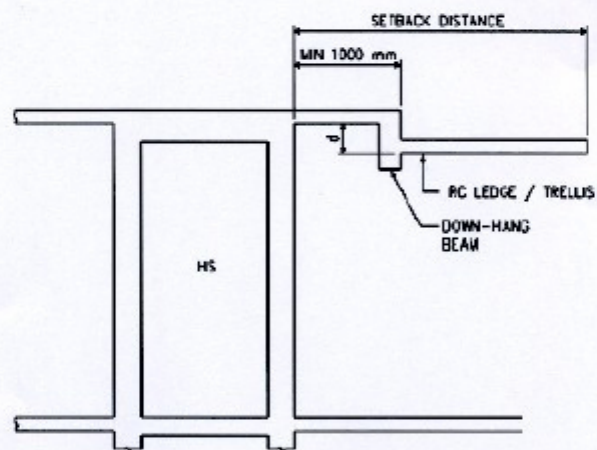


FIGURE 2.9(c) - DOWN-HANG BEAM NOT LOCATED ALONG
EXTERNAL BUILDING LINE

