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16 Jan 2004

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 Sirs,

**HOUSEHOLD SHELTER (HS) WALL THICKNESS & MINIMUM  
REINFORCEMENT FOR CLEAR HEIGHT BETWEEN 2400mm AND 3900mm  
FOR HOUSEHOLD SHELTER IN LANDED DWELLING UNIT**

At the Fire Safety and Shelter Department (FSSD) Standing Committee Meeting 6/2003 held in Nov 2003, members requested SCDF and BCA to review the need for an intermediate slab within a household shelter to keep the HS clear height to less than or equal to 2700mm in situations where the storey height of a landed dwelling unit is higher (up to 3900mm). This is currently practised so that the HS wall thickness is 250mm (for clear height between 2400mm to 2700mm with setback distance less than or equal to 6000mm); otherwise, the HS wall thickness and minimum reinforcement requirements are to be in accordance with Table 2.4(a)/ Table 2.4(b) and Table 3.4.2 of the "Technical Requirements for Household Shelters 2001" respectively.

2 SCDF and BCA had reviewed this requirement, taking into account that the removal of the intermediate slab would allow for greater design flexibility and use of space within the HS. SCDF has decided that based on the current setback requirements, the same minimum wall thickness and reinforcement can be used for HS in **landed dwelling unit** with clear height between 2400mm and 3900mm – refer to tables in **Annex A**. This relaxation shall take immediate effect.



A PROUD MEMBER OF THE HOME TEAM

**SINGAPORE CIVIL DEFENCE FORCE  
FIRE SAFETY & SHELTER DEPARTMENT  
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3 Please contact me or Maj Chan Keen Mun at 68481406 should you require any clarification.

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

Yours faithfully,

Cpt Ng Shu Heng  
SO Shelter Development  
for Commissioner, Singapore Civil Defence Force

cc

Members of FSSD Standing Committee

President, SISV

CEO, HDB  
Attn: Director Mr Lau Joo Ming

CE, LTA  
Attn: Dr Chin Kian Keong

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



A PROUD MEMBER OF THE HOME TEAM

**TABLE 1: MINIMUM HS WALL THICKNESS (FOR LANDED DWELLING UNIT)**

HS Clear Height (mm)	Setback Distance of HS Wall (mm)	HS Wall Thickness (mm)
2400 ≤ Ht ≤ 3900	≤ 6000	250
	> 6000	200

**TABLE 2: MINIMUM THICKNESS OF BASEMENT HS WALL (FOR LANDED DWELLING UNIT) IN DIRECT CONTACT WITH EARTH THROUGHOUT ITS ENTIRE HEIGHT**

HS Clear Height (mm)	HS Wall Thickness (mm)
2400 ≤ Ht ≤ 3900	250

**TABLE 3: MINIMUM REINFORCEMENT OF HS WALL (FOR LANDED DWELLING UNIT)**

HS Clear Height (mm)	Reinforcements at both internal and external faces of wall (both directions)	Shear Links (both directions)
2400 ≤ Ht ≤ 3900	T10 – 100	R6 – 600