Building and Construction Authority

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

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See **Distribution**

Dear Sir/Madam

NEW REQUIREMENTS UNDER THE BUILDING CONTROL (AMENDMENT) REGULATIONS 2013 AND THEIR COMMENCEMENT DATES

We wish to inform you of the following changes to requirements under the Building Control (Amendment) Regulations 2013.

Building Control (Amendment) Regulations 2013

2 The Building Control (Amendment) Regulations 2013 have been published in the Government Gazette on 25 Oct 2013. A list of the amendments is provided in **Annex A** for your information. The changes will be implemented in 2 stages, with some provisions coming into effect on 28 Oct 2013 and the rest on 1 Apr 2014.

Provisions that will come into effect on 28 Oct 2013

3 The changes which come into effect on 28 Oct 2013 are listed in **Annex A (Part 1)**. The major items for your attention are:

(a) Formalising the current practice for clearances from technical departments (regulation 42 and 43)

Applications for temporary occupation permit or certificate of statutory completion will need to be accompanied by the following, where applicable:

(i) clearances, permits or approvals under the Fire Safety Act relating to fire safety from the Commissioner of Civil Defence
(ii) clearances, permits or approvals under the Sewerage and Drainage Act relating to sewerage and drainage from the Public Utilities Board
(iii) clearances, permits or approvals under the Environmental Protection and Management Act from the Director-General of Environmental Protection
(iv) clearances, permits or approvals under the Street Works Act and Parking Places Act from the Land Transport Authority of Singapore
(v) clearances, permits or approvals under the Parks and Trees Act from the Commissioner of Parks and Recreation

(b) Ready-mixed concrete (regulation 38A)
Currently, batching plants supplying concrete used for structural elements in *major building works* (i.e. works requiring a certification from an accredited checker) have obtained valid product conformity certificates, and the specification of the ready-mixed concrete are listed in the product conformity certificate. A "product conformity certificate" is a certificate issued by a certification body accredited by the Singapore Accreditation Council under the Council's Accredited Scheme for Product Certification Bodies for the certification of ready-mixed concrete. This requirement is now incorporated in the Regulations and will also apply to on-site batching plants and plants supplying concrete for structural precast elements.

(c) Moveable panels on exterior of buildings (regulation 38B)
The installation of any movable panel that is to be fixed on the exterior surface of a building is prohibited, except when it is on a detached, semi-detached, terrace or linked house used solely as a residence. A "movable panel" includes a board, frame, plank or pane, which is designed to slide along a guide or track, or pivot about a pin, and which is constructed of any material.

(d) Window installation (regulation 41D)
For windows to be installed in a new building, either an approved window contractor or a licensed builder may now be engaged to install a window that is to be an exterior feature of a building. The current requirement for the actual installation to be carried out only by a trained window installer or by someone else under the supervision and guidance of a trained window installer remains unchanged.

In the case of a prefabricated window (i.e. a window fabricated and assembled at a location other than the site where the window is to be installed), the licensed builder has to check that the window has been installed in compliance with the objectives and performance requirements set out in the Fifth Schedule. It is not necessary for the licensed builder to submit a certificate to verify compliance, as this work is deemed to be included in the builder's certificate of completion, which is submitted on completion of the building works in accordance with Section 11(1)(f) of the Building Control Act.

(e) Duties of builder or approved window contractor (regulation 41E(1A))
For replacement or modification of a window in an existing building, a licensed builder or an approved window contractor carrying out the replacement or modification of the window shall, not later than 14 days after completion of the works, submit a certification of the completion to the Commissioner of Building Control.

(f) Prohibited material: daylight reflectance of materials used on external surface of buildings (Sixth Schedule)
The use of any material with a daylight reflectance exceeding 20% on external surface of buildings will be prohibited. Daylight reflectance refers

to the sum of both the specular and diffuse reflections of the material. To verify compliance, the Commissioner of Building Control may require submission of test reports from an accredited laboratory before issuing the temporary occupation permit or certificate of statutory completion.

Provisions that will come into effect on 1 Apr 2014

4 The changes that will come into effect on 1 Apr 2014 are listed in **Annex A (Part 2)**. The major items for your attention are:

(a) Plan approval for demolition works (regulation 4 and 10B)
An appropriate qualified person (QP) has to be appointed to prepare and submit demolition work plans for approval by the Commissioner of Building Control before a permit for demolition works is granted to commence demolition works. The QP has to supervise the demolition works in accordance with Section 9 of the Act. Details are provided in **Annex B**.

(b) Deviations to approved building plans (regulation 18)
All projects are required to obtain building plan (BP) approval before the commencement of non-structural building works. For deviations involving material changes from approved building plans (i.e. the non-structural plans), amendment plans have to be submitted for approval before the affected works are allowed to commence. No approval is required for deviations involving immaterial changes, which are to be submitted as record plans. Details are provided in **Annex C**.

(c) Specialist for alternative solutions (regulation 4(1)(e))
Where an alternative solution is to be utilised in any building works and the qualified person (QP) for the building works is not the specialist in that alternative solution, the application for approval of the plans of those building works shall be accompanied by details of the alternative solution, together with the certificate of a specialist in the alternative solution referred to in Section 9(2)(b)(ii) of the Building Control Act.

(d) Structural design calculations (regulation 9(2)(b))
The structural design calculations submitted for approval will not be required to be signed and endorsed by an accredited checker.

Revision to Approved Document

5 The Approved Document has also been revised to accommodate the recent changes to the Building Control Act and Regulations, as well as to provide clarity to the requirements and to standardise industry practices. Changes to Part M on Safety of Windows will come into effect on 28 Oct 2013. All other changes will come into effect on 1 Apr 2014 and will generally apply to projects where the first set of plans is submitted to the Commissioner of Building Control for approval on or after 1 April 2014. An electronic copy of the revised Approved Document can be downloaded from BCA's website from the link below:

http://www.bca.gov.sg/Publications/BuildingControlAct/others/Approveddocument.pdf

6 For your information, a table highlighting the changes in the Approved Document and relevant explanatory comments is provided in **Annex D**.

For Clarification

7 Please convey the contents of this circular to members of your organisation. Should you need clarification, you may send an email to bca_enquiry@bca.gov.sg or call the following hotlines.

Hotline	Contact Number
Building Plans	6325 7159
Structural Plans	1800 3425222

8 Thank you.

Yours faithfully,

CHOONG TECK MIN
DEPUTY DIRECTOR
BUILDING CONTROL POLICIES DEPARTMENT
for COMMISSIONER OF BUILDING CONTROL

ANNEX A: AMENDMENTS TO THE BUILDING CONTROL REGULATIONS

Part 1: Amendments that come into effect on 28 Oct 2013	
Reg	**Amendment**
38A	All ready-mixed concrete used for structural elements in major building works (i.e. works that require the endorsement of an accredited checker) has to be obtained from a plant which holds a valid product conformity certificate, and the specification of the ready-mixed concrete has to be listed in the product conformity certificate. A "product conformity certificate" is a certificate issued by a certification body that is accredited by the Singapore Accreditation Council under the Council's Accredited Scheme for Product Certification Bodies for the certification of ready-mixed concrete. This requirement is also applicable to on-site batching plants and plants supplying concrete for structural precast elements.
38B	The installation of any movable panel that is to be fixed on the exterior surface of a building is prohibited, except for a detached, semi-detached, terrace or linked house used solely as a residence. A "movable panel" includes a board, frame, plank or pane, which is designed to slide along a guide or track, or pivot about a pin, and which is constructed of any material.
41D	Other than an approved window contractor, a licensed builder may now be engaged for window installations. The current requirement for the actual installation to be carried out only by a trained window installer or by someone else under the supervision and guidance of a trained window installer remains unchanged.
41E(1A)	A licensed builder or an approved window contractor carrying out the replacement or modification of windows shall, not later than 14 days after completion of the works, submit a certification of the completion to the Commissioner of Building Control.
42 and 43	All applications for temporary occupation permit or certificate of statutory completion are required, where applicable, to be accompanied by the following: (a) clearances, permits or approvals under the Fire Safety Act relating to fire safety from the Commissioner of Civil Defence (b) clearances, permits or approvals under the Sewerage and Drainage Act relating to sewerage and drainage from the Public Utilities Board (c) clearances, permits or approvals under the Environmental Protection and Management Act from the Director-General of Environmental Protection (d) clearances, permits or approvals under the Street Works Act and Parking Places Act from the Land Transport Authority of Singapore (e) clearances, permits or approvals under the Parks and Trees Act from the Commissioner of Parks and Recreation.
Fourth Schedule	The list of minor works not requiring the certificate of an accredited checker has been amended. Please refer to our website at www.bca.gov.sg for details.
Fifth Schedule	Paragraph M, "Safety of windows": The performance requirements will cover all window types (i.e. casement and sliding) and address proper design.
Sixth Schedule	The use of **any** material on the external surface of the buildings which has daylight reflectance exceeding 20% is prohibited. Daylight reflectance of a material refers to the sum of both the specular and diffuse reflections of the material.

Part 2: Amendments that come into effect on 1 Apr 2014	
Reg	**Amendment**
4(1)(e)	Where an alternative solution is to be utilised in any building works and the qualified person for the building works (QP) is not the specialist in that alternative solution, the application for approval of the plans of those building works shall be accompanied by details of the alternative solution, together with the certificate of a specialist in the alternative solution referred to in Section 9(2)(b)(ii) of the Building Control Act.
9(2)(b)	The structural design calculations submitted for approval will not be required to be signed and endorsed by an accredited checker.
4(1)(vi) 10B	An appropriate qualified person (QP) has to be appointed to prepare and submit demolition work plans for approval by the Commissioner of Building Control before a permit is granted for demolition works to commence. The QP has to supervise the demolition works in accordance with Section 9 of the Act.
18(2A) 18(3A)	For deviations involving material changes from approved building plans (i.e. the non-structural plans), amendment plans have to be submitted for approval before the affected works are allowed to commence. No approval is required for deviations involving immaterial changes, which are to be submitted as record plans.
24(4)	Slight revision is made to the list of pre-requisite qualifications for registration as a resident technical officer.
First Schedule	The list of insignificant building works has been revised to include more types of works and to make some of the existing provisions clearer. Please refer to our website at www.bca.gov.sg for details.
Fifth Schedule	Amendments have been made to some provisions in the Fifth Schedule to add clarity to the performance requirements. Please refer to our website at www.bca.gov.sg for details.

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ANNEX B: REQUIREMENTS FOR SUBMISSION OF DEMOLITION WORK PLANS

Currently, an application for a permit to carry out demolition works is to be accompanied by (i) a method statement detailing how the demolition works are to be carried out; and (ii) an impact assessment report on surrounding buildings.

From 1 Apr 2014, **demolition work plans** must be prepared and submitted by an appropriate qualified person for approval by the Commissioner of Building Control before a demolition permit will be issued. The QP has to supervise the demolition of the structures in accordance with Section 9 of the Building Control Act. Please note that checking by an accredited checker (AC) will not be required. The demolition works shall conform to SS 557 – Code of Practice for Demolition.

The demolition work plans shall consist of items listed in the table below.

Reg	Provision
10B	**Particulars to be shown in demolition works plans** **10B.**—(1) The demolition works plans referred to in regulation 4(1)(*a*)(vi) shall consist of or contain such of the following as may be applicable: (a) demolition plans; (b) instrumentation and monitoring plans. (2) Without prejudice to regulations 6, 7, 8 and 9, all demolition works plans shall — (a) be in accordance with the provisions of the Act and these Regulations and any other requirement of the Commissioner of Building Control; and (b) be accompanied by — (i) an impact assessment report on neighbouring structures, which shall include design calculations showing the stability and adequacy of every structural element the structural continuity of which is to be truncated by the demolition works; (ii) design calculations showing that the floor is capable of resisting — (A) the load from the debris; or (B) where a demolition machine is intended to be placed on the floor of the building in accordance with the demolition works plans, the load from the demolition machine and the debris; and (iii) such reports as the Commissioner of Building Control may require. (3) Each demolition plan shall contain such of the following as may be applicable: (a) the location and site plan of the building to be demolished, which includes the distances between the building to be demolished and adjacent buildings which are not to be demolished;

(b) structural floor plans showing —

(i) in respect of each area of each floor plan, the imposed load for which the floor system or part thereof has been designed;
(ii) the demolition sequence and demolition zone for each floor;
(iii) the method statement on the handling and disposal of debris;
(iv) the type and weight of the demolition machine; and
(v) the location of the temporary ramp;

(c) a layout plan showing the demolition sequence of —

(i) all beams;
(ii) all columns;
(iii) all walls;
(iv) all slabs; and
(v) all edge parapets;

(d) the following information on safety and environmental protection measures:

(i) layout plan, details, material specifications and elevation view of shoring and temporary supports;
(ii) layout plan, details and material specifications of protective hoardings, covered walkways, catch platform, catch fans, scaffolding, protective screens and safety nets;
(iii) where a demolition machine is used, the route of safe movement of the demolition machine;
(iv) where a continuous beam extends from the building to be demolished to an adjacent building and the beam is to be cut off at the boundary of the buildings, the anchorage detail of the existing reinforcement bars of the beam where it is to be cut off.

(4) Each instrumentation and monitoring plan shall contain such of the following as may be applicable:

(a) the layout and location of other buildings (that are not to be demolished) in relation to the building to be demolished;
(b) the number, types, location, details and other particulars of instruments for monitoring building and ground movements;
(c) the frequency and duration of monitoring;
(d) allowable vibration limits;
(e) the location of closed-circuit television cameras to monitor the progress of demolition work, especially for demolition of high-rise buildings.

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ANNEX C: REQUIREMENTS FOR BUILDING PLAN (BP) APPROVAL

All projects are required to obtain building plan (BP) approval before the commencement of non-structural building works. To address industry's concern that it may be onerous to seek approval for minor changes to the approved BP during construction, BCA has prepared a set of **guidelines on immaterial changes in non-structural building works** below. Immaterial changes in non-structural building works do not require approval before commencement of construction works. The qualified person (QP) is only required to incorporate such changes in record plans, which are to be submitted on completion of works.

To address industry's feedback that utilities facilities (e.g. substations and shelters for pumps and compressors that are not intended for human occupation) typically have to be handed over earlier than the rest of the development where the design had not been finalised, BCA has also prepared a set of **guidelines on BP submission for utilities facilities** below.

GUIDELINES ON IMMATERIAL CHANGES FOR NON-STRUCTURAL BUILDING WORKS

1. These guidelines outline what constitute immaterial changes for non-structural building works.

2. Where a deviation involves immaterial changes, there is no need for the QP to obtain prior plan approval before proceeding with construction. The QP is however required to incorporate such change into **record plans, which are to be submitted upon completion of works**. All other deviations (i.e. material changes) from the approved plans for non-structural works would require submission of amendment plans for approval before construction is allowed.

3. **List of immaterial changes in non-structural building works**

Clause D Barrier Free Accessibility

- Changes or obstruction in the barrier free access route which results in an increase of less than 20% of its original distance. Distance shall be taken between two nearest accessible spaces.
- Shifting of accessible car park lots such that it is still located nearest possible to an accessible entrance and / or lift lobby.

Clause E Staircases

- Changes to staircase tread and riser size as long as it is within compliance.
- Changes to the width of staircase as long as it is at least 900mm.

Clause G Ventilation

- Changes to the number, size and/or positions of windows and doors as long as it complies with the natural ventilation requirement.

Clause I Energy efficiency

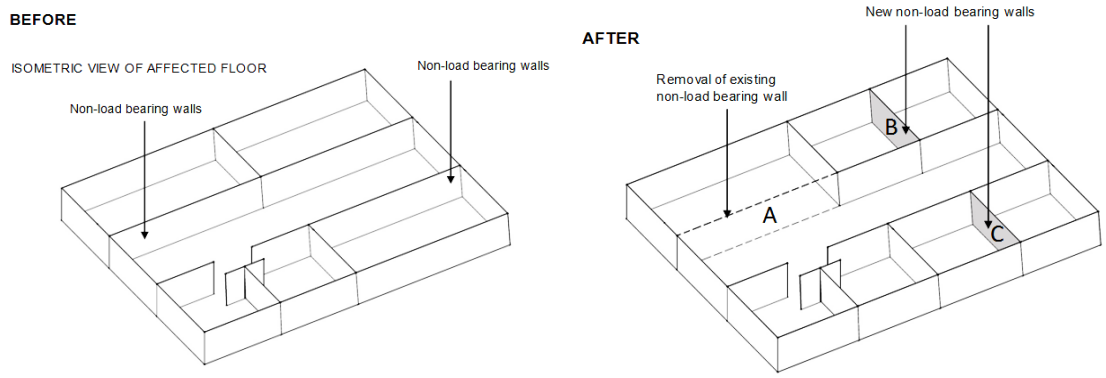
- Changes to the facade design as long as it does not exceed the RETV value of 25W/m2 and ETTV value of 50W/m2.

Others

- Changes to the area and/or positions of non-load bearing walls shall not make up more than 20% of the total area of non-load bearing walls on each affected floor (refer to Figure 1 on the next page).
- Changes to the size and position of plant/equipment rooms, store rooms or spaces not intended for human occupation.
- Minor changes in size and position of lifts and escalators.

4. To determine if the deviation is immaterial, it shall be evaluated against all other clauses. For example, increase in the size of window is considered immaterial under clause G, Ventilation. However, if it affects clause I, Energy efficiency and results in the ETTV value exceeding 50 W/m^2, it would be regarded as a material change and amendment plan submission is required.

Figure 1 Example of immaterial changes involving non-load bearing walls



The total area of the new walls and / or removed walls shall not be more than 20% of the total area of the original non-load bearing walls on the affected floor.

$$\frac{\text{Sum of area of walls A, B and C}}{\text{Area of the original non-load bearing walls on the affected floor}} \times 100\% < 20\%$$

Application procedures, forms and documents required for submission of record plans

5. Submissions of record plans for immaterial changes in non-structural building works are to be made via CORENET. The details of the submission procedures will be made known via CORENET broadcast at a later date. The following documents are required in the submission of record plans.

   (a) as-built drawings (QPs are required to cloud and indicate the details of the immaterial changes on the drawings. Only those drawings affected by the immaterial changes are required to be submitted)
   (b) application form with QP's declaration, and
   (c) technical departments' clearances (if applicable).

GUIDELINES ON BP SUBMISSION FOR UTILITIES FACILITIES

6. For integrated and independent utilities facilities (e.g. substations and shelters for pumps and compressors, which are not intended for human occupation), these structures could be built based on approved structural plans. They could subsequently be included into the main BP submission.

   [Note: QPs should notify BCA early on such facilities in their projects]

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ANNEX D: LIST OF CHANGES TO THE APPROVED DOCUMENT

Para	Current provisions	Amendments	Explanatory notes
C	**HEADROOM AND CEILING HEIGHT**		
C.1	**OBJECTIVE**		
C.1.1	The objectives of paragraph C.2.1 are to protect people from – (a) injury caused by inadequate headroom; and (b) injury or loss of amenity caused by inadequate height of room or space.	[No change.]	
C.2	**PERFORMANCE REQUIREMENT**		
C.2.1	All rooms and spaces in a building shall be provided with adequate headroom and height for their intended uses.	[No change.]	
C.2.2	The requirement in paragraph C.2.1 shall not apply to the following rooms and spaces – (a) an attic room; (b) equipment and plant rooms; (c) the underside of a staircase or escalator if such staircase or escalator is not located along an access route or circulation space; (d) toilets, bathrooms or lavatories; and (e) store rooms, utility rooms, wash area and the like.	The requirement in paragraph C.2.1 shall not apply to the following rooms and spaces – (a) an attic room not exceeding an area of 10 square metres, built by the owners for their own use; (b) equipment and plant rooms; (c) the underside of a staircase or escalator if such staircase or escalator is not located along an access route or circulation space; (d) toilets, bathrooms or lavatories built by the owner for his own use; and (e) store rooms not exceeding an area of 6 square metres.	Attic rooms nowadays are usually equivalent to a new floor and are getting larger in size. For the safety of the occupants, full safety provisions shall be applicable to attic rooms. The exemption will be limited to attic rooms of area 10m^2 or less. A 2.0 m headroom shall be applicable to toilets, bathrooms, powder rooms and lavatories. Exemption for "utility room" and "wash area" is removed as these terms are ambiguous. The exemption for store rooms will also be limited to those with an area of area 6m^2 or less. This is to be consistent with other exemptions for store rooms.
C.3	**ACCEPTABLE SOLUTION**		
C.3.1	The requirement in paragraph C.2.1 is deemed to be satisfied if the specifications set out in paragraphs C.3.2 and C.3.3 are complied with.	[No change.]	

Para	Current provisions	Amendments	Explanatory notes
C.3.2	**Headroom**		
C.3.2.1	The headroom of every room, access route and circulation space shall not be less than 2.0m.	[No change.]	
C.3.2.2	[Nil]	For sheltered car parks, the headroom at parking lots and driveway shall not be less than 2.2m.	
Note	*1 The term "access route" shall include a covered walkway or footway of a building.* *2 The headroom is measured from the finished floor level to the underside of any beam, duct, service pipe, fixture, fitting or other obstruction or projection; and in the case of a doorway, it shall be measured up to the underside of the transom.* *3 Windows, which open into any access route or circulation space, consideration should be given such that they shall not result in any inadequacy in headroom in the access route or circulation space.*	*1 The term "access route" shall include a covered walkway or footway of a building.* *2 The headroom is measured from the finished floor level to the underside of any beam, duct, service pipe, fixture, fitting or other obstruction or projection; and in the case of a doorway, it shall be measured up to the underside of the transom.* *3 Windows, which open into any access route or circulation space, consideration should be given such that they shall not result in any inadequacy in headroom in the access route or circulation space.* *4 The headroom along a flight of staircase is measured vertically between the pitch line and any point directly above that limits the headroom. See Figure C.3.2.1(a).*	This is to make clear the manner headroom is to be measured at staircases.
C.3.3	**Ceiling Height**		
C.3.3.1	The ceiling height of rooms and spaces shall not be less than 2.4m.	The ceiling height of rooms and spaces shall not be less than 2.4m.	
Note	*1 The requirement in paragraph C.3.3.1 does not apply to the following –* *(a) corridors and lobbies; and* *(b) localised areas within a room or space where there is a drop in ceiling height due to physical constraints such as structural beams or building services.* *2 The ceiling height is measured from the finished*	*1 The requirement in paragraph C.3.3.1 does not apply to the following:* *(a) corridors and lobbies;* *(b) toilets, bathrooms, lavatories or powder rooms; and* *(c) localised areas within a room or space where there is a drop in ceiling height due to physical constraints such as structural beams or building*	A 2.0 m headroom shall be applicable to toilets, bathrooms, lavatories and powder rooms.

Para	Current provisions	Amendments	Explanatory notes
	floor level to the underside of any slab, false ceiling or suspended ceiling.	*services.* *2 The ceiling height is measured from the finished floor level to the underside of any slab, false ceiling or suspended ceiling, whichever is lower.*	
D	**BARRIER-FREE ACCESSIBILITY**	**ACCESSIBILITY IN BUILT ENVIRONMENT**	
D.1	**OBJECTIVE**		
D.1.1	The objective of paragraphs D.2.1 to D.2.4 is to ensure that persons with disabilities are able to enter and carry out their activities and functions within a building.	The objective of paragraphs D.2.1 to D.2.4 is to ensure that persons with disabilities are able to easily gain access to and exit from the whole or part of a building, and that persons with disabilities, children between 90cm and 120cm in height, caregivers of infants, and nursing women are able to carry out their activities within the building with reasonable ease.	The Code on Accessibility has been reviewed with enhanced provisions to improve accessibility in the built environment for persons with disabilities and the elderly. The code also place emphasis on universal design concepts and introduces new requirements that will benefit the young and parents with infants.
D.2	**PERFORMANCE REQUIREMENT**		
D.2.1	At least one access route shall have barrier-free features to enable persons with disabilities to – (a) approach the building or the vehicle park; and (b) have access to those spaces where they may be expected to work or visit.	[No change.]	
D.2.2	Sanitary facilities that are appropriate for use by persons with disabilities shall be adequately provided for use by such persons.	Sanitary facilities that are appropriate for use by persons with disabilities and sanitary facilities that are appropriate for use by children between 90cm and 120cm in height shall be adequately provided for use by such persons.	
D.2.3	Barrier-free facilities that are appropriate for the intended type of building or occupancy shall be adequately provided.	Appropriate facilities for lactation and changing of diapers shall be adequately provided and be accessible for use by nursing women and caregivers of infants.	
D2.4	Signages shall be adequately provided to guide persons with disabilities to spaces or facilities where or which they may be expected to work, visit or use.	Appropriate wayfinding guides such as signages or audible or tactile information providing directions or instructions shall be adequately provided within a building to guide persons with disabilities to spaces or facilities	

Para	Current provisions	Amendments	Explanatory notes
		where or which they may be expected to work, visit or use.	
D.3	**ACCEPTABLE SOLUTION**		
D.3.1	The requirements in paragraphs D.2.1 to D.2.4 are deemed to be satisfied if the provisions and facilities for persons with disabilities comply with the Code on Barrier-Free Accessibility in Buildings issued by the Commissioner of Building Control.	The requirements in paragraphs D.2.1 to D.2.4 are deemed to be satisfied if the provisions and facilities for persons with disabilities, children between 90cm and 120cm in height, caregivers of infants and nursing women comply with the Code on Accessibility in the Built Environment issued by the Commissioner of Building Control.	
E	**STAIRCASE**		
E.1	**OBJECTIVE**		
E.1.1	The objective of paragraphs E.2.1, E.2.2 and E.2.3 is to safeguard protect people from injury and to facilitate access during movement from one level to another in a building.	The objective of paragraphs E.2.1 and E.2.2 is to protect people from injury and to facilitate access during movement from one level to another in a building.	Typographical amendment.
E.2	**PERFORMANCE REQUIREMENT**		
E.2.1	A staircase (including a flight of 2 steps or more) shall provide a safe and suitable passage for movement of people.	[No change.]	
E.2.2	A staircase shall have – (a) handrails or guides to assist movement; (b) landings to break a fall and provide a place for rest; (c) sufficient headroom to avoid injury; and (d) barriers against falling from 1.0 m or more from an open side.	[No change.]	
E.2.3	Paragraphs E.2.1 and E.2.2 shall apply only to staircases that provide access to levels having rooms or spaces meant for human occupation.	[Note: This clause is to be deleted]	Where a staircase is provided, the requirements shall apply in all cases. This is to remove ambiguity.
E.3	**ACCEPTABLE SOLUTION**		
E.3.1	The requirements in paragraphs E.2.1 and E.2.2 are deemed to be satisfied if a staircase is designed and constructed in accordance with the specifications set out in paragraphs E.3.2 to E.3.8.	[No change.]	

Para	Current provisions	Amendments	Explanatory notes
E.3.2	**Projection**		
E.3.2.1	No projection, other than handrails, is allowed in a staircase within a height of 2.0m from the landing or pitch line.	[No change.]	
E.3.3	**Width of staircase**		
E.3.3.1	The width of every staircase shall not be less than 900mm.	The clearance of the width of every staircase shall not be less than 900mm.	This is to make clear that the minimum 900 mm width requirement for staircase refers to a clear width, taking into account any handrails.
Note	*1 The clearance of the width is measured from the inner side of the wall, balustrade or handrail.*	[No change.]	
	2 The requirement in paragraph E.3.3.1 does not apply to the following – *(a) plants and equipment rooms;* *(b) the production area of an industrial building;* *(c) attic rooms in residential buildings; and* *(d) houses built by the owners for their own use.*	*2 The requirement in paragraph E.3.3.1 does not apply to staircase which is solely for access to the following –* *(a) plants and equipment rooms;* *(b) the production area of an industrial building;* *(c) attic rooms of area not exceeding 10m² in residential buildings; and* *(d) houses built by the owners for their own use.*	Attic rooms nowadays are usually equivalent to a new floor and are getting larger in sizes. For safety of the occupants, full safety provisions shall be applicable to attic rooms. The exemption will be limited to attic rooms of area 10m² or less.
E.3.4	**Risers and treads**		
E.3.4.1	The height of a riser shall not be more than 175mm.	[No change]	
E.3.4.2	The width of a tread shall not be less than 250mm except that in a residential unit, the width of a tread may not be less than 225mm.	The width of a tread shall not be less than 275 mm. See Figure E.3.4.2(a) on measurements of tread and riser.	To achieve a friendlier built environment, gentler stairs will be required in all buildings, except industrial buildings and residential units.
E.3.4.2A		Notwithstanding paragraphs E.3.4.2, the width of a tread of any staircase in any residential unit shall not be less than 225mm.	Residential units will be allowed to adopt the current riser (175mm) and tread (225mm) requirements.
E.3.4.2B		Notwithstanding paragraphs E.3.4.2, the width of a tread of any staircase in any industrial building shall not be less than 250mm.	Industrial buildings will be allowed to adopt the current riser (175mm) and tread (250mm) requirements.
E.3.4.3	The width of a tapered tread or winder in a spiral, circular or geometric staircase measured	The width of the tread of any tapered step shall be taken as that when measured at a	Redrafting to improve clarity.

Para	Current provisions	Amendments	Explanatory notes
	at a distance of 500mm from the narrower end shall not be less than 225mm in the case of residential buildings and 250 mm in the case of other buildings.	distance of 500 mm from the narrower end.	
E.3.4.4	The risers and treads within each flight of stairs shall be of uniform height and size.	[No change.]	
Note	*1 A tolerance of +/-5mm in any flight of stairs is acceptable.*	*A tolerance of 5 mm between two consecutive steps in any flight of staircase is acceptable.*	Redrafting to improve clarity. Please note that this clause is about construction tolerance. The clause does not suggest that the minimum tread size and maximum riser height for all the steps within the same flight of stair is allowed to be adjusted to be 5 mm less than what is required.
	2 The requirements in paragraphs E.3.4.1 to E.3.4.3 do not apply to the following – *(a) plants and equipment rooms;* *(b) the production area of an industrial building;* *(c) attic rooms in residential buildings; and* *(d) houses built by the owners for their own use.*	*2 The requirements in paragraphs E.3.4.1 to E.3.4.3 do not apply to staircase which is solely for access to the following –* *(a) plants and equipment rooms;* *(b) the production area of an industrial building;* *(c) attic rooms of area not exceeding 10m² in residential buildings; and* *(d) houses built by the owners for their own use.*	Attic rooms nowadays are usually equivalent to a new floor and are getting larger in sizes. For safety of the occupants, full safety provisions shall be applicable to attic rooms. The exemption will be limited to attic rooms of area 10m2 or less.
E3.5	**Landing**		
E.3.5.1	A landing shall be provided at every floor level and door opening.	[No change.]	
E.3.5.2	Except for spiral, circular or geometric staircases, an intermediate landing shall be provided in between floor levels at intervals of not more than 18 risers.	Except for spiral staircases, an intermediate landing shall be provided in between floor levels at intervals of not more than 18 risers.	
E.3.5.3	The length of any intermediate landing, measured in the direction of travel, shall not be less than 900mm.	The clear width of any landing, measured from the handrail or kerb (whichever protrudes further into the landing) to the wall or external railing of the landing, shall not be less than 900mm. See Figure E.3.5.3(a).	The amendment here takes into consideration, a chamfered landing.

Para	Current provisions	Amendments	Explanatory notes
E.3.5.4	A landing shall not have any step or drop except that in the case of a residential unit, one winder is allowed in every 90º turn.	A landing shall not have any step or drop.	
E.3.5.5		Notwithstanding paragraph E.3.5.4, one winder is allowed in every 90º turn in the staircase of any dwelling unit.	
Note	*The requirements in paragraphs E.3.5.1 to E.3.5.4 do not apply to the following –* *(a) plants and equipment rooms;* *(b) the production area of an industrial building;* *(c) attic rooms in residential buildings; and* *(d) houses built by the owners for their own use.*	*The requirements in paragraphs E.3.5.1 to E.3.5.4 do not apply to staircase which is solely for access to the following –* *(a) plants and equipment rooms;* *(b) the production area of an industrial building;* *(c) attic rooms of area not exceeding 10m² in residential buildings; and* *(d) houses built by the owners for their own use.*	Attic rooms nowadays are usually equivalent to a new floor and are getting larger in sizes. For safety of the occupants, full safety provisions shall be applicable to attic rooms. The exemption will be limited to attic rooms of area 10m2 or less.
E.3.6	Headroom	[Note: This clause is to be deleted]	
E.3.6.1	The headroom of any staircase shall not be less than 2.0m.	[Note: This clause is to be deleted]	To be moved to requirements under “Headroom and Ceiling Height”.
Note	*The headroom is measured vertically between the pitch line and any point directly above that limits the headroom.*	[Note: This clause is to be deleted]	To be moved to requirements under “Headroom and Ceiling Height”.
E.3.6	**Handrails**		
E.3.6.1	A handrail shall be provided on at least one side of the flight of staircase.	[No change.]	
E.3.6.2	The height of the handrail shall be between 750mm and 900mm above the pitch line.	The height of the handrail shall be between 750mm and 1000mm above the pitch line.	This amendment makes the new minimum safety barrier height for staircase and the new maximum handrail height for staircase consistent.
E.3.6.3		Handrails shall: (a) have a circular section of 32 mm to 50 mm in diameter or an equivalent gripping surface; and (b) have a clear space between the handrail and all wall surfaces as shown in Figure E.3.6.3(a) of – (i) not less than 40 mm; or (ii) at least 60 mm where the wall has a rough surface.	This amendment is to provide clarity on the requirements for handrails.

Para	Current provisions	Amendments	Explanatory notes
E.3.6.4		A recess containing a handrail shall extend at least 450 mm above the top of the rail as shown in Figure E.3.6.4(a).	This amendment is to provide clarity on the requirements for handrails.
Note	*1 A handrail need not be provided for a flight of not more than 5 steps.* *2 A handrail may terminate at the landing and the ends of the handrail should be properly formed or rounded off so that they do not pose a danger to the user.* *3 The requirements in paragraphs E.3.6.1 and E.3.6.2 do not apply to the following –* *(a) plants and equipment rooms;* *(b) the production area of an industrial building; and* *(c) houses built by the owners for their own use.*	[Note: This clause is to be deleted] *1 A handrail shall be continuous throughout the entire length of stairs and the ends of the handrail should be properly formed or rounded off so that they do not pose a danger to the user.* *2 The requirements in paragraphs E.3.6.1 and E.3.6.2 do not apply to staircase which is solely for access to the following –* *(a) plants and equipment rooms;* *(b) the production area of an industrial building; and* *(c) houses built by the owners for their own use.*	The amendments require handrails to be provided for all staircases to facilitate a more elderly friendly built environment.
E.3.8.1	The open sides of a staircase shall be protected by barriers in accordance with Section H – 'Safety from Falling' of this document.	[Note: This clause is to be deleted]	This is addressed by requirements under "Safety from falling".
Note	*1 For the purpose of paragraph E.3.8.1, the open sides shall include any gap or opening along the entire flight of steps.*	[Note: This clause is to be deleted]	This is addressed by requirements under "Safety from falling".
	2 The requirement in paragraph E.3.8.1 does not apply to the following – *(a) plants and equipment rooms;* *(b) the production area of an industrial building; and* *(c) houses built by the owners for their own use.*	[Note: This clause is to be deleted]	This is addressed by requirements under "Safety from falling".
G	**VENTILATION**		
G.1	**OBJECTIVE**		
G.1.1	The objective of paragraphs G.2.1 and G.2.2 is to protect people from loss of amenity due to lack of fresh air.	[No change.]	

Para	Current provisions	Amendments	Explanatory notes
G.2	**PERFORMANCE REQUIREMENT**		
G.2.1	Ventilation shall be adequately provided in a building for its intended occupancy.	[No change.]	
G.2.2	Residential buildings, other than houses built by the owners for their own use, shall be provided with natural ventilation for the purpose of paragraph G.2.1.	[No change.]	
G.3	**ACCEPTABLE SOLUTION**		
G.3.1	The requirement in paragraph G.2.1 is deemed to be satisfied if – (a) natural ventilation that complies with paragraphs G.3.2.1 and G.3.2.2; or (b) mechanical ventilation or air-conditioning system that complies with the ventilation rates given in SS 553 – Code of Practice for Air-Conditioning and Mechanical Ventilation in Buildings is provided.	[No change.]	
G.3.1A		*The requirement in paragraph G.3.1 does not apply to the following rooms or spaces –* *(a) any store room of area not exceeding 6.0m^2; and* *(b) any private lift lobby of area not exceeding 6.0m^2.*	This replaces the clause immediately below. The exemption from ventilation requirements here is extended to private lift lobby of area 6m^2 or less.
Note	*The requirement in paragraph G.3.1 does not apply to the following rooms or spaces –* *(a) utility rooms and store rooms not exceeding 6.0m^2 in floor area; and* *(b) corridors or passageways not exceeding 13m in length.*	[Note: This clause is to be deleted]	This is deleted to remove ambiguity with the term "utility room".
G.3.2	**Natural Ventilation**		
G.3.2.1	Natural ventilation shall be provided by means of one or more openable windows or other openings with an aggregate area of not less than – (a) 5% of the floor area of the room or space required to	Natural ventilation shall be provided by means of one or more openable windows or other openings with an aggregate area of not less than – (a) 5% of the floor area of the room or space required to	The amendments here are to make the requirements consistent with natural ventilation requirement for car parks in SS 553.

Para	Current provisions	Amendments	Explanatory notes
	be ventilated; and (b) in the case of an aboveground car park, 15% of the floor area of the car parking area required to be ventilated.	be ventilated (b) in the case of an aboveground car park, comply with the relevant clauses in SS 553 – Code of Practice for Air-Conditioning and Mechanical Ventilation in Buildings.	
Note		Except otherwise stated in the following, any openable window or opening may be considered to be unobstructed. (a) The effective open area of a sliding window is the unobstructed area when the sliding window is opened fully. (b) The effective open area of any opening installed with fixed louvers shall be assumed to be 50% of the area of that opening. (c) For any casement windows installed with restrictors and can be opened at least 30 degrees or more, the effective open area of the window shall be assumed to be 50% of the window opening.	The amendments here are to provide clarity on the calculation of effective open area for natural ventilation for various types of openings. For item(c), the standard adopted is the same as the current standard adopted in the United Kingdom.
G.3.2.1A		Notwithstanding clause G.2.2 and in lieu of natural ventilation, mechanical ventilation shall be provided to the following rooms or spaces within residential developments including house built by the owners for their own use - (a) fitness room; (b) clubhouse; (c) civil defence shelter; (d) bathroom, toilet or lavatory; and (e) basement.	The amendment here is to allow the fitness room and the clubhouse in residential developments to be mechanically ventilated. This change is made to accommodate design trends found in condominiums.
G.3.2.2	The windows or other openings shall be – (a) located such that they open to the exterior of the building or an adjoining open space; and (b) in the case of an aboveground car park, permanently located on each level and evenly distributed	The windows or other openings shall be located such that they open to – (a) the exterior of the building; (b) an airwell with a minimum width of 3.0m and a minimum area open to the sky complying with Table G.3.2.2(a); and	The amendments here are to provide clarity for acceptable sources for natural ventilation.

Para	Current provisions	Amendments	Explanatory notes
	along the external walls to facilitate cross-ventilation throughout the car park.	(c) a recess, exceeding 2.0m from the external building wall, of minimum width 3.0m. See Figure G3.2.2(b).	
Note	*In lieu of natural ventilation, mechanical ventilation may be provided to the following rooms or spaces within residential units –* *(a) bathroom, toilet or lavatory;* *(b) basement; and* *(c) Civil defence shelter.*	[Note: This clause has been relocated to clause G.3.2.1A]	
G.3.2.3		No part of any room or space (other than a room in a warehouse) that is designed for natural ventilation shall be more than 12.0 m from any window/opening ventilating the space.	This amendment sets a maximum distance for effective ventilation. The 12.0m requirement is similar to the distance applied for car park ventilation in SS 553. Comparatively, the distances adopted in New Zealand is 10 metres, and in Hong Kong SAR, 9 metres)
H	**SAFETY FROM FALLING**		
H.1	**OBJECTIVE**		
H.1.1	The objective of paragraph H.2.1 is to protect people from injury caused by falling.	The objective of paragraphs H.2.1, H.2.1A and H.2.1B is to protect people from injury caused by falling from a height.	
H.2	**PERFORMANCE REQUIREMENT**		
H.2.1	Where there is a vertical drop in level of 1.0m or more, appropriate measures shall be taken to prevent people from falling from a height.	[No change.]	
H.2.1A		Where a barrier is used to prevent falling from a height, the barrier shall not have any feature that facilitates the climbing of the barrier.	
H.2.1B		Where glass is used as a part or whole of a barrier, the glass used shall be able to withstand the loading for which it is designed and shall not be susceptible to spontaneous breakage or to shattering.	
H.2.2	The requirement in paragraph H.2.1 shall not apply to –	The requirement in paragraphs H.2.1, H.2.1A and H.2.1B shall not apply to –	The amendments here are to improve the safety of occupants in buildings.

Para	Current provisions	Amendments	Explanatory notes
	(a) roofs or other areas generally not intended for human occupation; and	(a) any roof which is accessible for maintenance purposes only and not easily accessible to the public; and	Visitors to a building may not be familiar with its layout and may wander into areas not meant for their access. If access to such out-of-bounds areas is provided with staircases and/or doorways, it may not be intuitive to the visitor that he is not allowed to enter the area. Access by way of a cat-ladder and/or a hatch door will be deemed as a non-permanent access. Note: New Zealand has a requirement where roofs with permanent access (e.g. internal stairs to the roof) have to be provided with safety barriers.
	(b) special service or usage areas such as loading or unloading bays, stages for performance or entertainment.	(b) any area where the provision of a barrier would prevent it from being used as intended, such as a loading dock or pier, platform for the loading or unloading of goods, or for boarding or alighting of passengers, stage for performance or entertainment, golf driving range, equipment pit and the like.	This amendment clarifies the meaning of the previous term "special service or usage areas".
H.3	**ACCEPTABLE SOLUTION**		
H.3.1	The requirement in paragraph H.2.1 is deemed to be satisfied if a barrier is provided in accordance with the specifications set out in paragraphs H.3.2 to H.3.5.	The requirement in paragraphs H.2.1, H.2.1A and H.2.1B is deemed to be satisfied if a barrier is provided in accordance with the specifications set out in paragraphs H.3.2 to H.3.5.	
H.3.2	**Height of barrier**		
H.3.2.1	The height of a barrier shall not be less than – (a) 1.0m at all locations except for locations indicated in (b);	(a) [No change.]	
	(b) 900mm at the lower edge of the window, stairs, ramps and gallery or balcony with fixed seating in areas such as theatres, cinemas and assembling halls.	(b) 900 mm at the lower edge of the window and gallery or balcony with fixed seating in areas such as theatres, cinemas and assembling halls.	The proposed amendment is to standardize the minimum safety barrier height requirement at stairs and ramps to 1.0m.

Para	Current provisions	Amendments	Explanatory notes
Note	*1 The height of a barrier is measured vertically from the finished floor level to the top of the barrier.*	[No change.]	
	2 The height of a barrier at the flight of stairs is measured vertically from the pitch line to the top of the barrier.	[No change.]	
		3 Where a kerb or step with dimensions more than 150mm by 150mm is provided next to a barrier, the height of the barrier shall be measured from the top of the kerb or step.	This amendment is to clarify the measurement of a safety barrier's height where a foothold is provided next to the safety barrier.
	4 The requirements in paragraphs H.3.2.1 do not apply to houses built by the owners for their own use.	[No change.]	
H.3.3	**Horizontal loading and design of glass panel barriers**	**Horizontal loading and design of barriers**	
H.3.3.1	A barrier shall be designed to withstand a horizontal loading determined in accordance with the following Standards –	[No change.]	
H.3.3.2	Glass panel barriers shall be designed and installed in accordance with Section 8 of BS 6180 – Barriers in and about Buildings – Code of Practice.	[No change.]	
H.3.4	**Size of opening**		
H.3.4.1	The lowest 75mm of the barrier at the external wall shall be built solid.	The lowest part of the barrier (being at least 75mm measured from the finished floor level) shall be built with no gap, in order to prevent any object from falling through the base of the barrier.	This amendment is to add clarity to the provision's intent.
H.3.4.2	The lowest 75 mm of the bay window shall not be openable.	[No change.]	
H.3.4.3	In all buildings, except for industrial buildings (a) the size of any opening or gap in a barrier shall not be large enough as to permit the passage of a sphere of a diameter of 100mm; and	In non-industrial buildings, the size of any opening or gap in a barrier shall not be large enough as to permit the passage of a sphere of a diameter of 100mm.	
	(b) The barrier at a location where there is a	[Note: This clause is to be deleted]	Move to new paragraph H.3.4A.

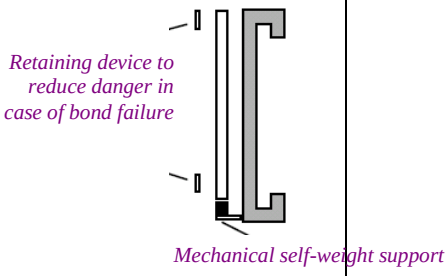
Para	Current provisions	Amendments	Explanatory notes
	vertical drop in level of 3.0m or more shall have no toeholds between the height of 150mm and 750mm above the finished floor level. The use of perforated sheet or mesh rigidly fixed over the full barrier height is acceptable provided the openings have a maximum dimension (other than the perimeter) of 50mm.		
H.3.4.4	In industrial buildings, the size of any opening or gap in a barrier shall not be large enough as to permit the passage of a sphere of a diameter of 150mm.	[No change.]	
H.3.4.4A		In areas of maintenance, including plants, equipment rooms, catwalks or platforms for maintenance, accessible by authorised personnel only where necessary, the size of the opening or gap in the barrier shall not be large enough as to permit the passage of a sphere of a diameter of 500mm.	This amendment is to clarify the requirement on gap size for safety barriers that are located in maintenance areas (which are accessible by only maintenance personnel). Note: para H.3.4.1 will still apply here.
H.3.4.5	For a flight of staircase, any triangular opening or void formed around a tread, riser and the bottom edge of the barrier, the size of any opening or gap shall not be large enough as to permit the passage of a sphere of a diameter of 150mm.	For a flight of staircase – (a) In all buildings, except for industrial buildings, any triangular opening or void formed around a tread, riser and the bottom edge of the barrier, the size of any opening or gap shall not be large enough as to permit the passage of a sphere of a diameter of 150mm. (b) In all buildings, except for industrial buildings, the gap size between any two consecutive steps shall not be large enough as to permit the passage of a sphere of a diameter of 100mm. (c) In industrial buildings, the gap size between any two consecutive steps shall not be large enough as to permit the	This amendment is to achieve the intent of preventing small children from slipping through the gaps that are in between steps.

Para	Current provisions	Amendments	Explanatory notes
		passage of a sphere of a diameter of 150mm.	
H.3.4.6	The requirements under paragraph H.3.4 do not apply to promenades and boardwalks at ground level along the waterfront or houses built by the owners for their own use.	[No change.]	
H.3.4.7	The requirements in paragraph H.3.4.3 (b) do not apply to bay windows in a residential unit.	[Note: This clause has been relocated to clause H.3.4A.4 (b).]	
H.3.4A	**Requirements to prevent climbing**		Requirements on climbability is moved to this part of the document
H.3.4A.1		In all buildings except industrial buildings, the barrier at a location where there is a vertical drop in level of 1.0m or more shall have a height of at least – (a) that specified in paragraph H.3.2.1; or (b) 850mm measured from the last climbable toehold, whichever is higher. See Figure H.3.4A.1(a).	The amendments are to provide clarity to the climbability requirements.
H.3.4A.2		A toehold means – (a) any opening in a perforated sheet or mesh having a horizontal dimension of more than 50mm and a vertical dimension of more than 30mm; or (b) a kerb or protrusion having a width of more than 50mm and has a chamfer gentler than 45˚ relative to the horizontal plane. See Figures H.3.4A.2(a), (b) and (c) for an illustration of the toehold dimensions.	The amendment here is to provide clarity on the toehold requirements.
H.3.4A.3		A toehold is considered to be climbable if it measures within 600mm vertically from – (a) the finished floor level; (b) a step; or (c) another climbable toehold.	The amendment here is to provide clarity on the toehold requirements as well as climbability requirements.

Para	Current provisions	Amendments	Explanatory notes
H.3.4A.4		The requirements under paragraph H.3.4A do not apply to – (a) promenades and boardwalks at ground level along the waterfront; (b) bay windows in a residential unit; or (c) houses built by the owners for their own use.	The amendment here states the locations where climbability requirements are not applicable.
H.3.5	**Glass Barrier**		
H.3.5.1	Where glass is used as a part or whole of a barrier, laminated glass shall be used.	[No change.]	
H.3.5.2	All glass used must comply with SS 341: Specification for Safety Glazing Materials for Use in Buildings.	[No change.]	
M	**SAFETY OF WINDOWS**		
M.1	**OBJECTIVE**		
	The objective of paragraphs M.2.1 and M.2.2 is to protect people from injury caused by falling windows.	[No change.]	
M.2	**PERFORMANCE REQUIREMENT**		
M.2.1	A window system shall be adequately designed and constructed with appropriate materials for its intended use.	[No change.]	
M.2.2	A casement window system shall have – (a) fasteners, fixings, hinges and stays of adequate number, size and strength to safely support the weight of the window system and other loads imposed on it; (b) a structural frame profile that is of adequate size and strength and adequately reinforced at locations where screws or rivets are to be affixed; and (c) appropriate design and materials used to minimise occurrence of localised corrosion.	A window system shall have — (*a*) window components, including fasteners, fixings, hinges and stays of adequate number, size and strength to safely support the weight of the window system and other loads imposed on it; (*b*) a structural frame profile that is of adequate size and strength and adequately reinforced at locations where screws or rivets are to be affixed; and (*c*) features and components to prevent the window from detaching, dislodging or falling during its intended use.	The amendment here extends the requirements to cover all types of windows (and not just casement windows).
M.3	**ACCEPTABLE SOLUTION**		
M.3.1	In the case of aluminium alloy window, the requirements in paragraphs M.2.1 and M.2.2 are	[No change.]	

Para	Current provisions	Amendments	Explanatory notes
	deemed to be satisfied if such window is designed and constructed in accordance with SS 212 – Specification for Aluminium Alloy Windows.		
N	**USE OF GLASS AT HEIGHT**		
N.1	**OBJECTIVE**		
N.1.1	The objective of paragraph N2 is to protect persons from injury cause by spontaneous breakage of glass elements at height and by falling glass panels resulting from bond failure of structural sealant.	[No change.]	
N.2	**PERFORMANCE REQUIREMENT**		
N.2.1	Where glass is used as a part or whole of the facade, roof, canopy or other type of overhead glazing of a building located at height of 2.4 metres or more, appropriate measures shall be taken to minimise the risk of injury to people in the event of spontaneous breakage of such glass elements.	Where glass is used as a part or the whole of the facade, roof, canopy, wall or other type of overhead glazing of a building located at a height of 2.4 metres or more, whether situated within the interior or forming the exterior of a building, appropriate measures shall be taken to minimise the risk of injury to people in the event of spontaneous breakage of such glass elements.	The amendment is to improve clarity.
N.2.2	Where structural sealant glazing is used in a glass curtain wall or other glass installation located at a height of 2.4 metres or more, whether situated within the interior or forming the exterior of a building, appropriate measures shall be taken to minimise the risk of injury to people in the event of falling glass panels resulting from bond failure of the structural sealant.	[No change.]	
N.3	**ACCEPTABLE SOLUTION**		
N.3.1	The requirement in paragraphs N.2.1 is deemed to be satisfied if the specifications set out in paragraphs N.3.2 to N.3.4 are complied with.	[No change.]	
N.3.2	Float (or annealed) glass, heat strengthened glass, laminated glass or other type of glass that is not prone to spontaneous breakage shall be used as the glass material at height.	[No change.]	

Para	Current provisions	Amendments	Explanatory notes
N.3.3.	Where monolithic tempered glass, heat-soaked tempered glass or other types of glass that are prone to spontaneous breakage is used in the facade, roof, canopy or other type of overhead glazing located at a height of 2.4 metres or more, the design of the facade, roof, canopy or overhead glazing shall provide for suitable protection such as installation of screens or shields to protect people from any injury in the event of breakage of such glass elements at height. Where monolithic tempered glass, heat-soaked tempered glass or other types of glass that are prone to spontaneous breakage is used in the facade, roof, canopy or other type of overhead glazing located at a height of 2.4 metres or more, the design of the facade, roof, canopy or overhead glazing shall provide for suitable protection such as installation of screens or shields to protect people from any injury in the event of breakage of such glass elements at height.	[No change.]	
N.3.4	Where the glass is used as a part or whole of the facade, roof, canopy or other type of overhead glazing, the glass used shall comply with SS 341: Specification for Safety Glazing Materials for Use in Buildings.		
N.3.5	The requirement in paragraph N.2.2 is deemed to be satisfied if the specifications set out in paragraphs N.3.6 to N.3.8 are complied with.		
N.3.6	The structural sealant glazing (SSG) shall be constructed to be of (a) two-sided SSG type; or (b) four-sided SSG type with retaining devices		
Note:	*1 The requirement in paragraph N.3.6(b) is illustrated in Figure N1* *2 Retaining devices are*		

Para	Current provisions	Amendments	Explanatory notes
	to be designed and constructed to prevent any fall of facade panels in the event of bond failure of the structural sealant.		
N.3.7	Mechanical self-weight supports shall be provided for all glass panels of the SSG.  *Figure N1* *Four-sided SSGS with mechanical self-weight and retaining devices*		
N.3.8	The SSG shall be designed and constructed in accordance with the following Standards – (a) ASTM C1184: Standard Specification for Structural Silicone Sealants and ASTM C1401: Standard Guide for Structural Sealant Glazing; or (b) BS EN 13022-2: 2006: Glass in Building - Structural Sealant Glazing and BS EN 15434: 2006: Glass in Building – Product Standard for Structural and/or Ultra-violet Resistant Sealant.		
O	**VEHICULAR BARRIER**		New regulations on vehicular barrier
O.1	**OBJECTIVE**		
O.1.1		The objectives of paragraphs O.2.1 and O.2.2 are to (a) protect people from injury caused by vehicle falling out from a building where vehicles have access. (b) protect people within a building, at designated waiting areas, lift lobbies, passenger pick-up points, shops or the like, from injury due to impact from vehicles in a building.	

Para	Current provisions	Amendments	Explanatory notes
O.2	**PERFORMANCE REQUIREMENT**		
O.2.1		A vehicular barrier which is capable of resisting or deflecting the impact of vehicles shall be provided to access ramps and to any edges in a floor of a building where vehicles have access to prevent the vehicles from falling out of a building.	
O.2.2		Appropriate measures shall be taken to prevent vehicles from colliding into a waiting area, lift lobby, passenger pick-up point, shop or the like located at an end or a turn of driveway in a building where vehicles have access.	
O.3	**ACCEPTABLE SOLUTION**		
O.3.1		The requirements in paragraphs O.2.1 and O.2.2 are deemed to be satisfied if a barrier is provided in accordance with the specifications set out in paragraph O.3.2.	
O.3.2	**Horizontal loading of barrier**		
		The vehicular barrier shall be capable of resisting forces set out in Loading for Buildings. Code of Practice for Dead and Imposed Loads BS 6399-Part 1; and SS EN 1991	

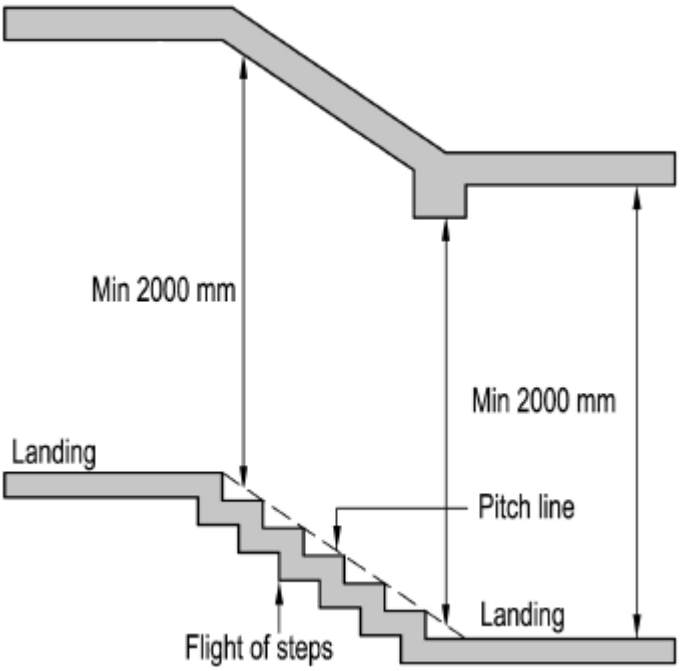


Figure C.3.2.1(a) - Measurement of headroom

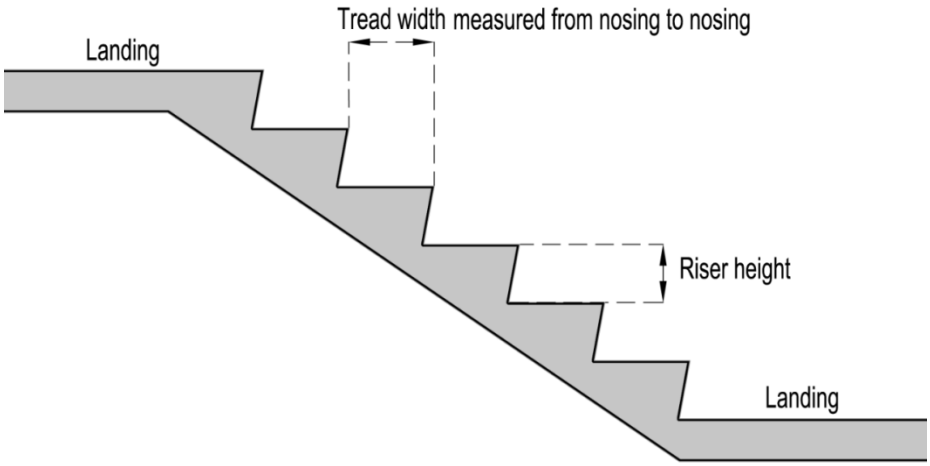


Figure E.3.4.2(a)- Measurements of tread and riser

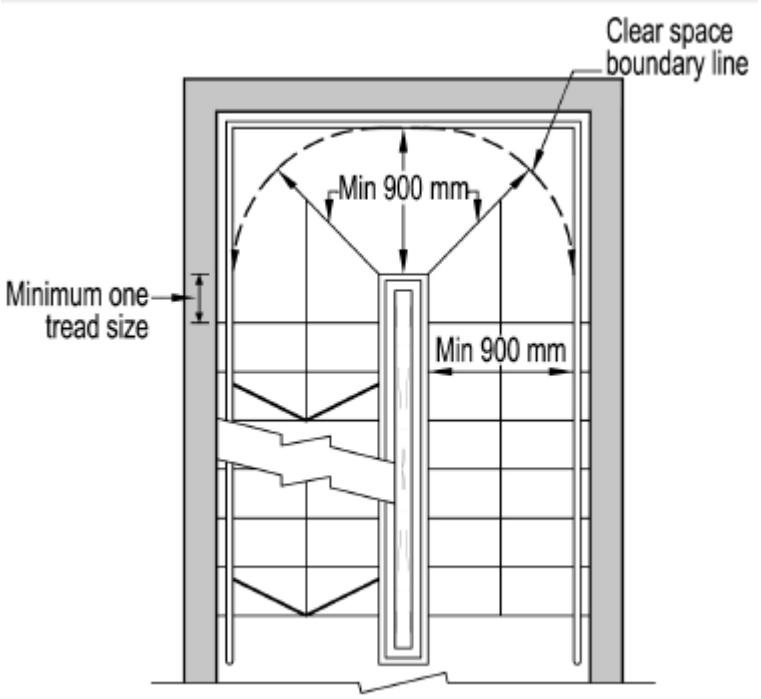


Figure E.3.5.3(a) - Measurement of landing width

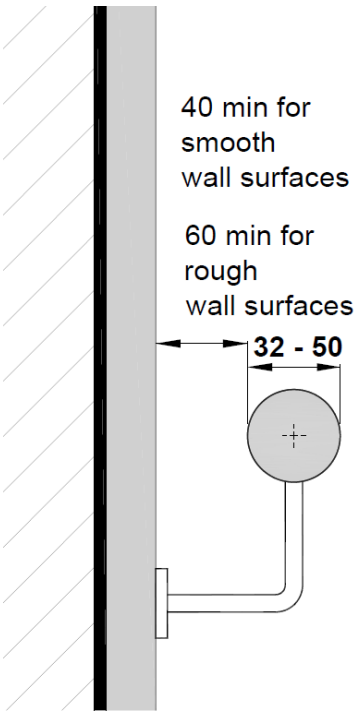


Figure E.3.6.3(a) - Handrails

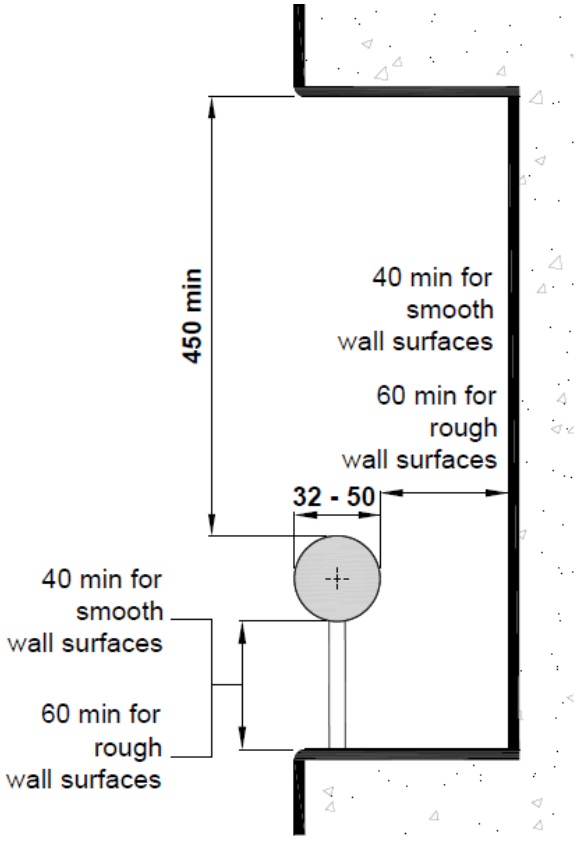


Figure E.3.6.4(a) - Handrails in Recess

Height	Minimum airwell size (m2)
<= 30m	10
Subsequent 3m	+ 1

Table G.3.2.2(a) - Dimensions of Airwells

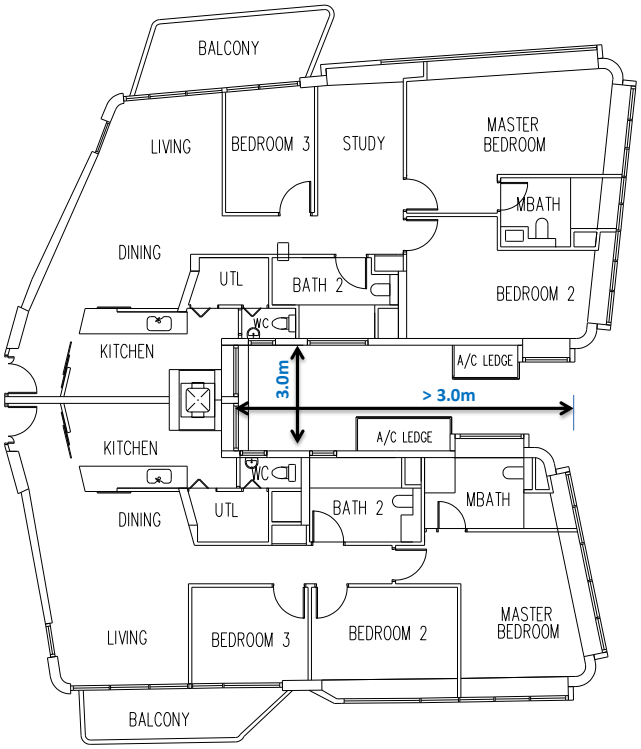


Figure G3.2.2(b)- Recessed Void Dimensions

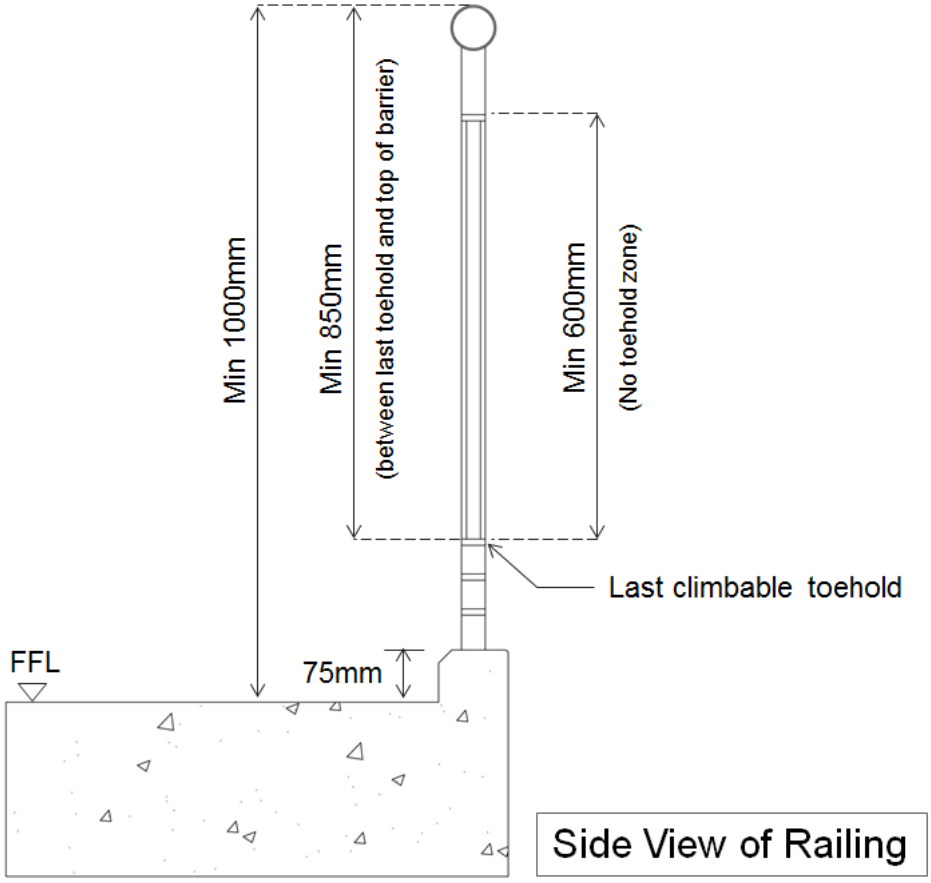


Figure H.3.4A.1(a) - Requirements to Prevent Climbing

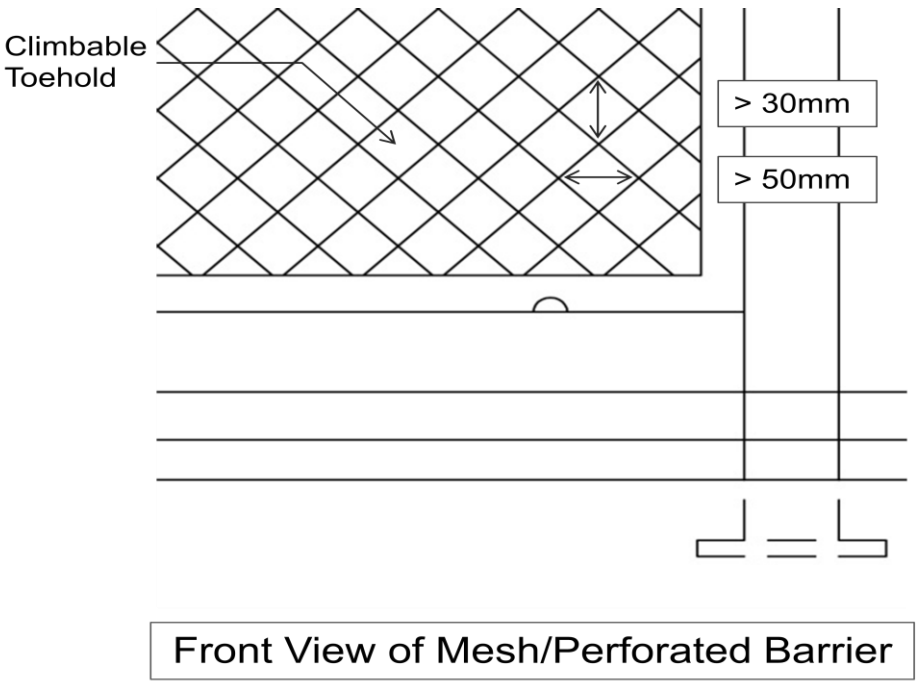


Figure H.3.4A.2(a) - Toehold Dimensions at Mesh/Perforated Barrier

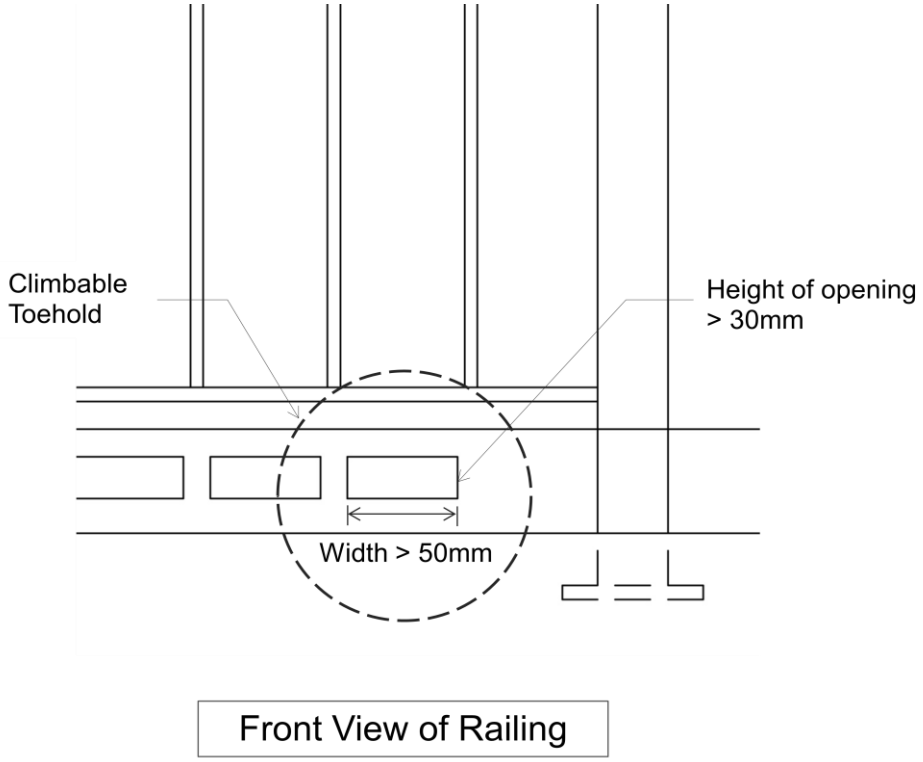


Figure H.3.4A.2(b) - Toehold Dimensions at Railing

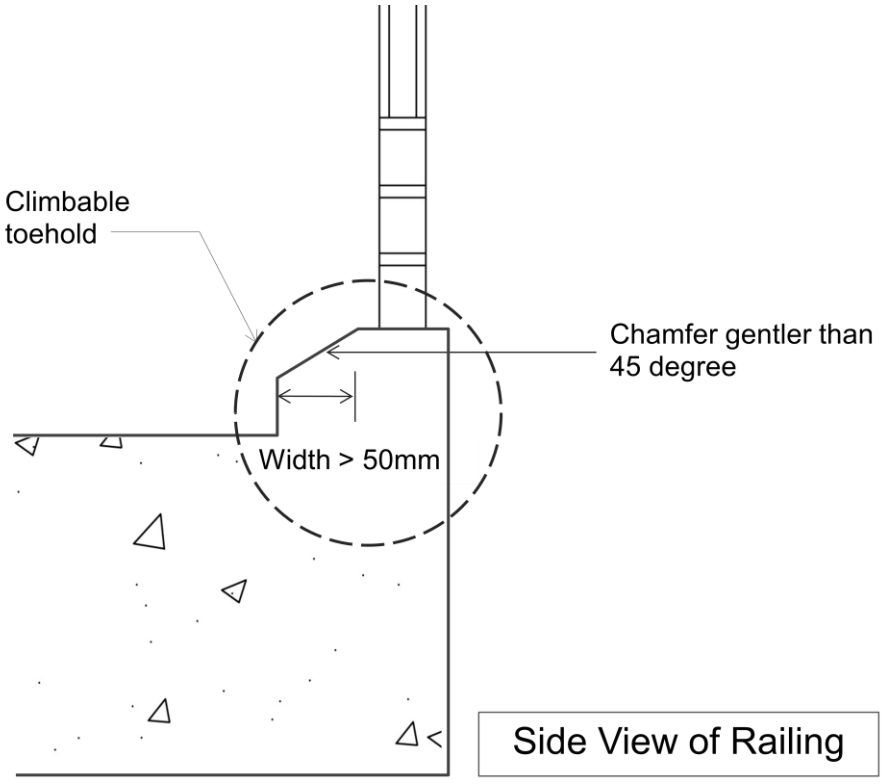


Figure H.3.4A.2(c) - Toehold Dimensions at Kerb/ Protrusion

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