



**“From Cradle to Cradle”
Workshop on Planning & Design for
Safety in Project Life Cycle for Public
Housing Developments**

**Safety Considerations for
Cleansing & Maintenance
Workers and End Users**

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Housing Department

**Safe Design Provisions
Under Model Client Brief
and Technical Guides**

Presented by

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CA/D&S

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Housing Department

Project Life Cycle

From cradle to cradle

**Collaboration between
Development & Construction Division (DCD) and
Estate Management Division (EMD)
on Design Review and Feedback**

Maintenance

- ***Meeting of Project Design Review Committee (PDRC)***
 - ***Meeting of Detailed Design Review Panel (DDRP)***
 - ***Meeting of Liaison Group on Construction Quality (LGCQ)***
 - ***Technical Feedback***
- Construction*
- Operation*

Project Life Cycle

From cradle to cradle

Safety Considerations for Cleansing & Maintenance Workers

Management

Operation

Planning & Design for Safety

Use

(a) Cat-ladders

- Avoid placing cat-ladder near building edges to prevent accidental fall of equipment to below



- Access to cat ladder should be free from obstacles, such as water pipes, drain pipes



- **Avoid high cat-ladder and replace by staircase as far as possible**
- **Intermediate resting platform should be provided for cat ladder with excessive height**
- **Working platform shall be provided for operation of the valves at high level**
- **First step of cat ladder should not be too high from finished floor level**
- **Cat ladder shall be provided with safety loops to protect workers from falling down**

(a) Cat Ladders

Model Client Brief for Public Rental Housing Developments (2009 Edition) **Schedule 1 – Schedule of Finishes, Provisions and Fittings**

2.8.2 (a)(i) Provide safe access to main and upper roof level for operation and maintenance of the services such as permanent platform and staircase. For limited space, provide suspended steel platform and cat ladder with adequate security measures from trespass.

(a) Cat Ladders

Upper Roof with Safe Access



Cat Ladder

- provided in EHC4 only when unavoidable and located away from edge of building



Suspended Steel Service Platform

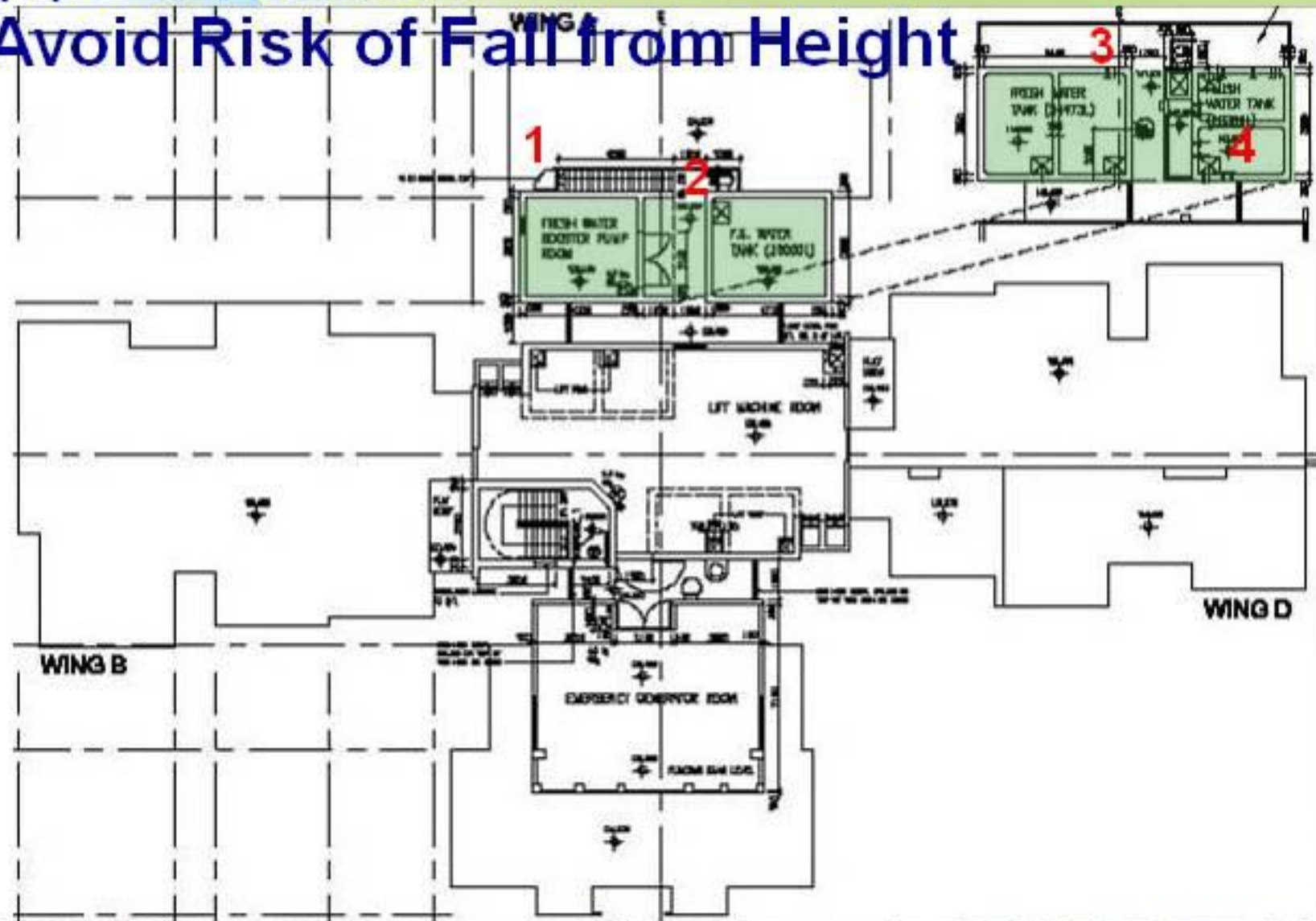


Steel Stair



**Safe Maintenance Access for Twin Tank
Eastern Harbour Crossing Site Phase 4**

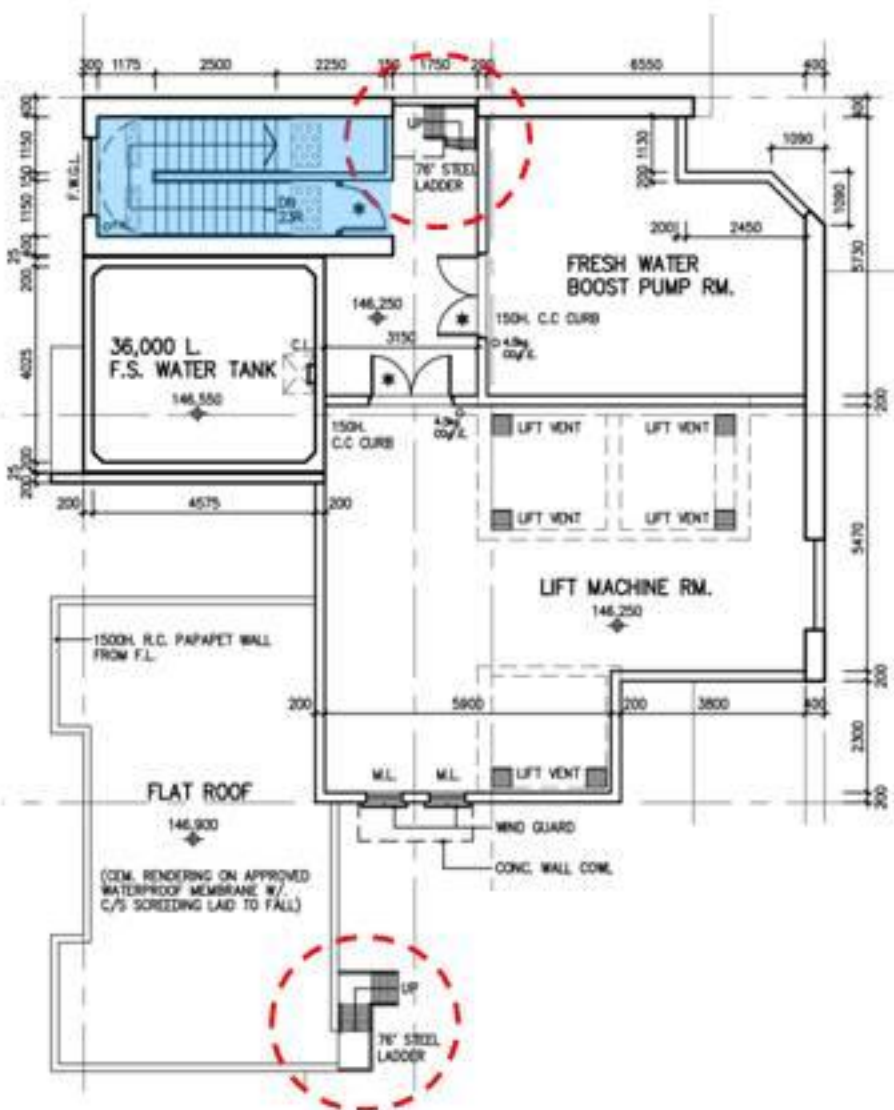
(a) Cat Ladders Avoid Risk of Fall from Height



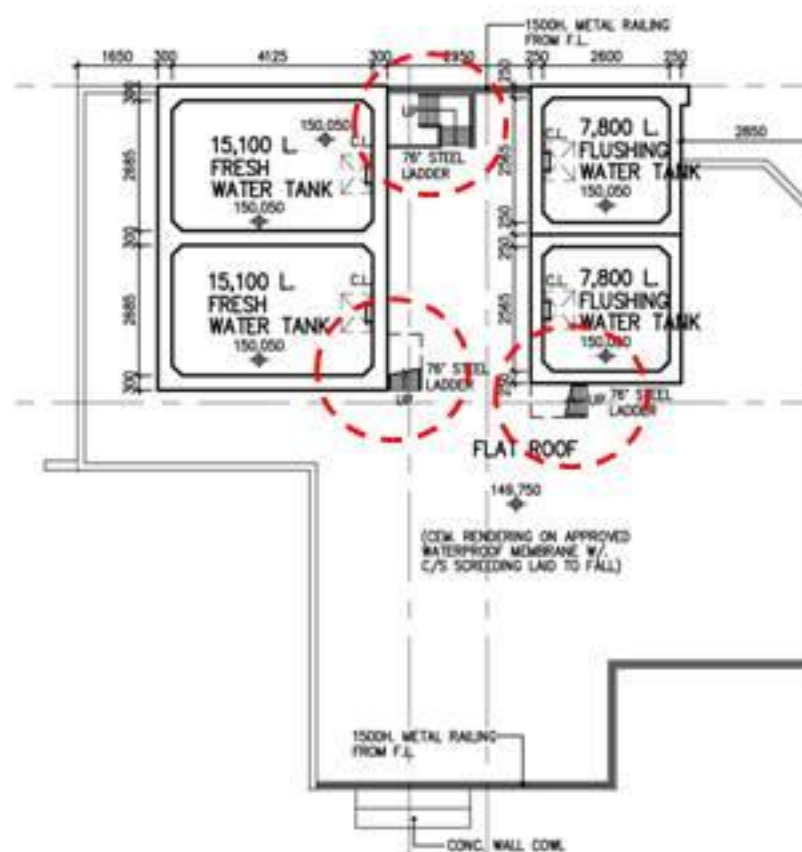
Location of cat ladders away from the vertical edges of external walls of the building with risk of fall from height

(a) Cat Ladders Enhancement - Steel Ladder Provision

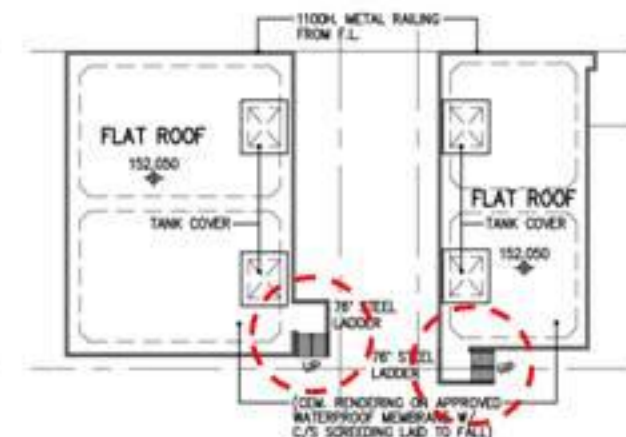
Project Life Cycle



PLAN OF LIFT MACHINE ROOM



UPPER ROOF PLAN

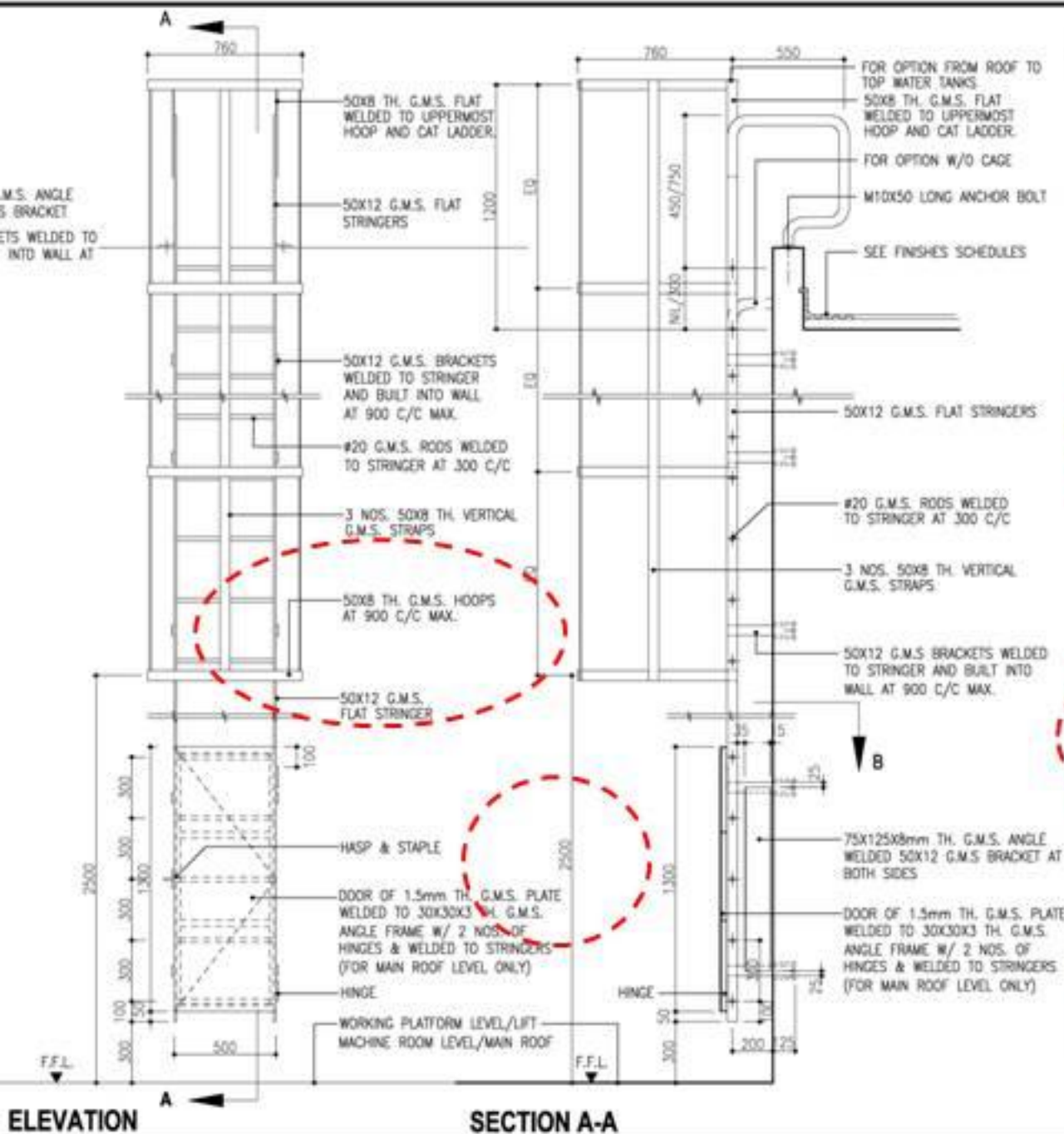


ROOF PLAN OF
WATER TANK

Provide Safe Access by Steel Ladders to Main Roof and Upper Roof Level for Operation and Maintenance in Lei Yue Mun Phase 3

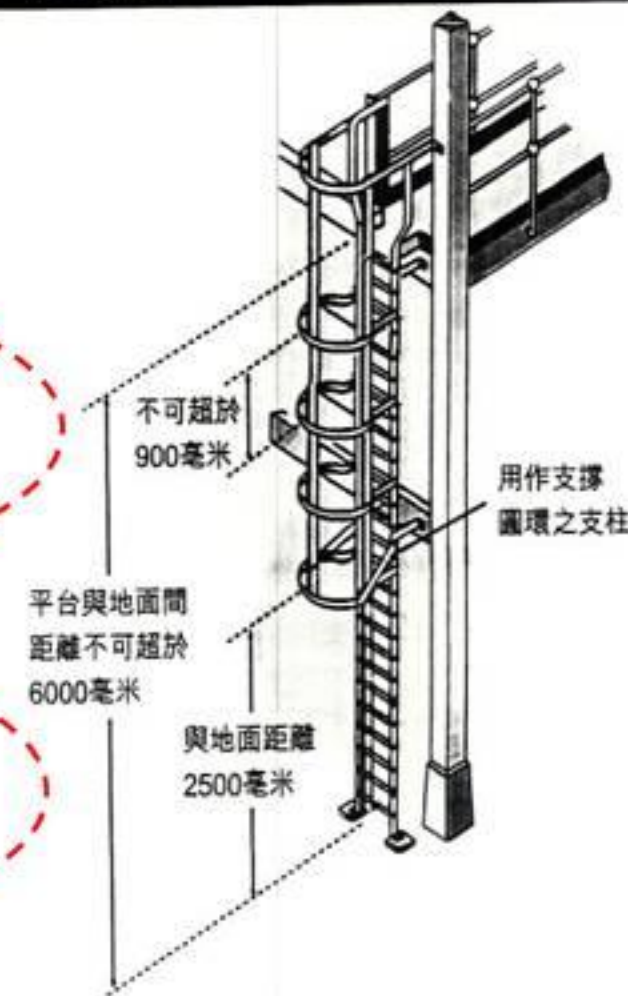
(a) Cat Ladders Avoid Risk of Fall from Height

Project Life Cycle



使用固定直梯的安全要點

- 直梯之最高梯級高度超於工作台或其他平面三米或以上，就要安裝適當的安全背環裝置。
- 每一條背環應同等距離但不超過900毫米。
- 最高背環應與工作台上護欄同一高度。
- 最低背環距離地面2500毫米。



Safety Loop Design in compliance with Guideline from Occupational Safety & Health Council



"From Cradle to Cradle" Workshop on Planning & Design for Safety in Project Life Cycle for Public Housing Developments

13

(b) Horizontal lifeline fall arrest system

From cradle to cradle

- A standard provision to enhance safety of workers working at height



Use

- Not place close to edge for low canopies or covered walkways as the fall arrest distance will be inadequate



- Provide safe access immediate next to each zone of the Horizontal Lifeline

Operation of Horizontal lifeline fall arrest system



- Provide safe and direct access to Horizontal Lifeline on 1/F canopy from common area such as lift lobby, corridor and staircase, instead of by cat ladders inside pipe duct from G/F



(b) Horizontal Lifeline Fall Arrest System

Model Client Brief for Public Rental Housing Developments (2009 Edition) Schedule 1 – Schedule of Finishes, Provisions and Fittings

4.2.4(c) Provide fall protection (guardrails) or fall arrest provisions – to floor edges (near floor opening – light well, skylight, canopy, upper roof top such as water tank, generator room & lift machine room, top of pedestrian walkways, etc).

(b) Horizontal Lifeline Fall Arrest System



**Safe Maintenance Access to
First Floor Canopy
Eastern Harbour Crossing Site Phase 4**

(b) Horizontal Lifeline Fall Arrest System

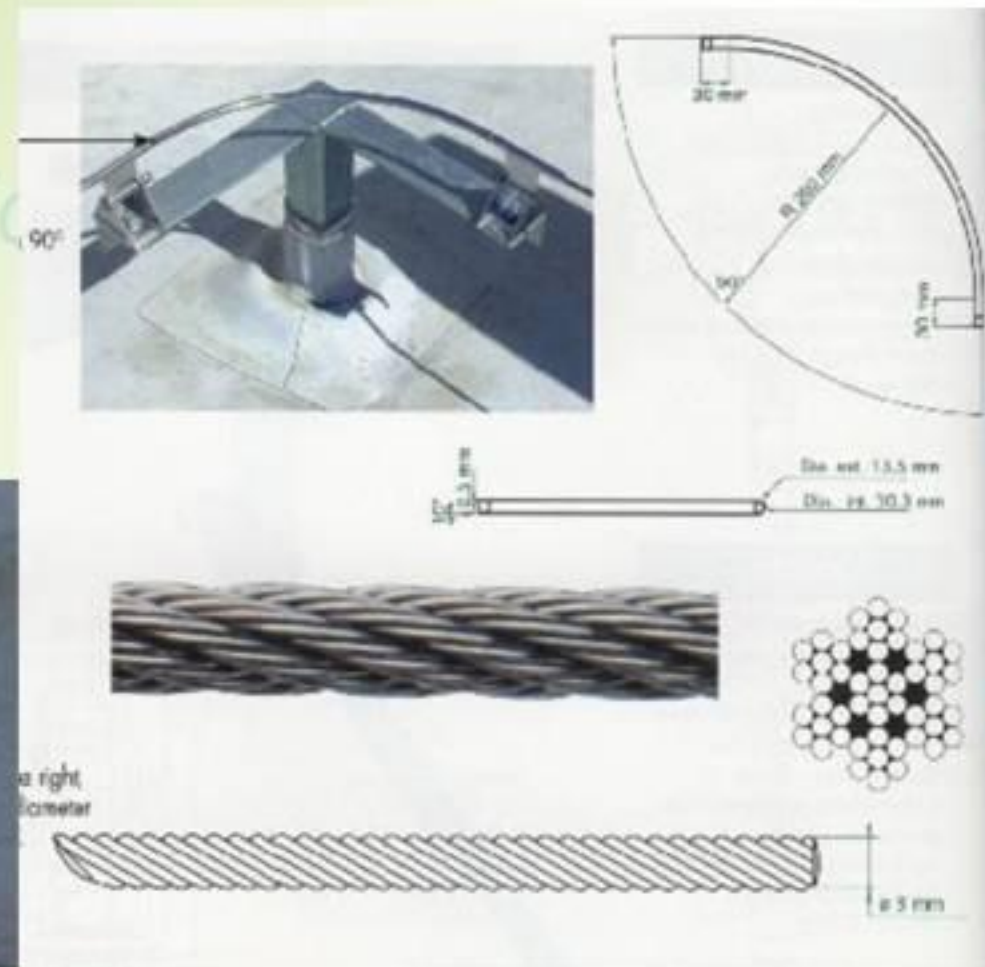
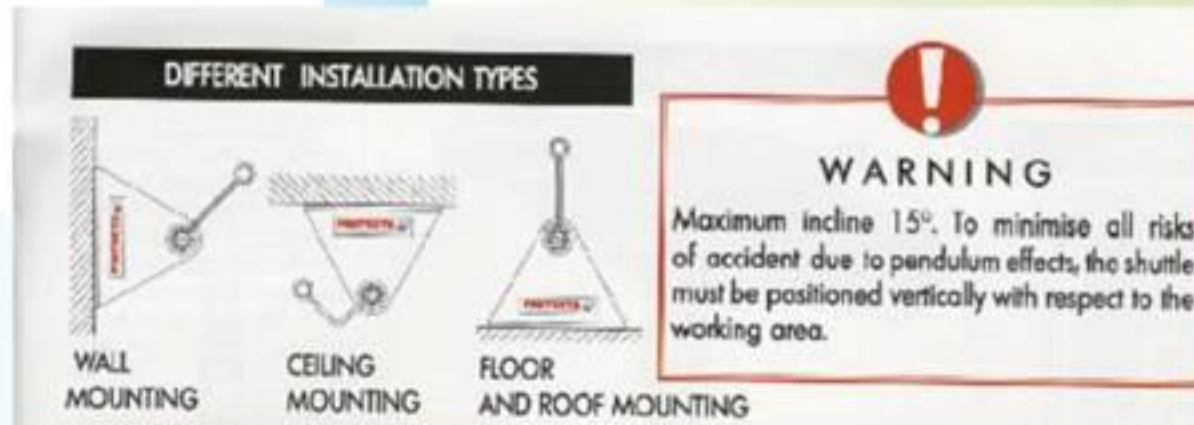
Maintenance Access from G/F to 1/F

- External Cat Ladder
- Safe Arrest System

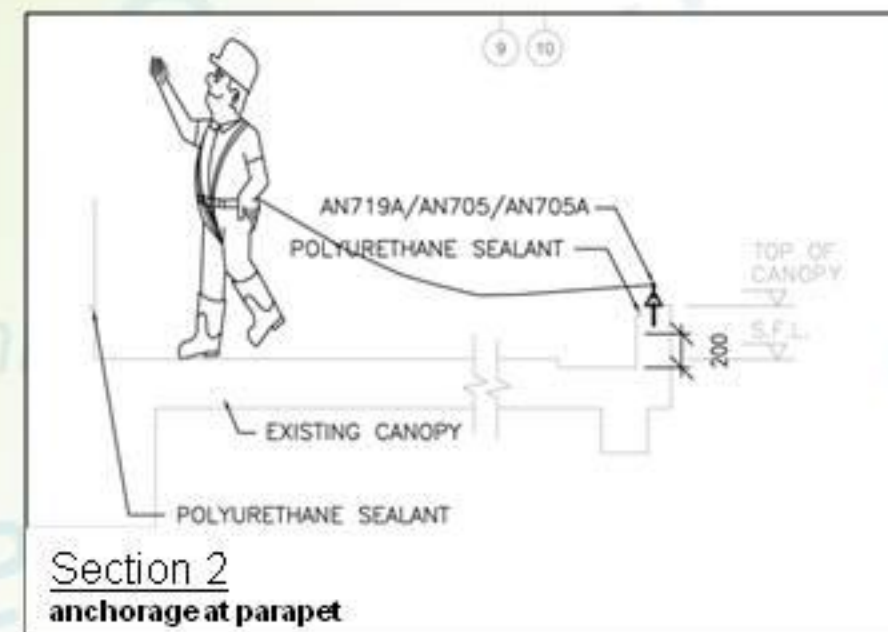
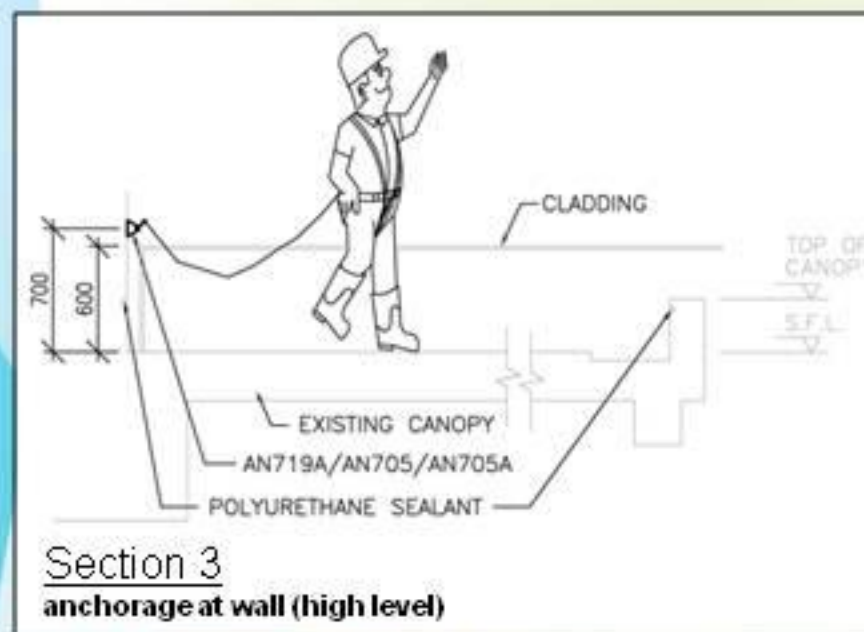
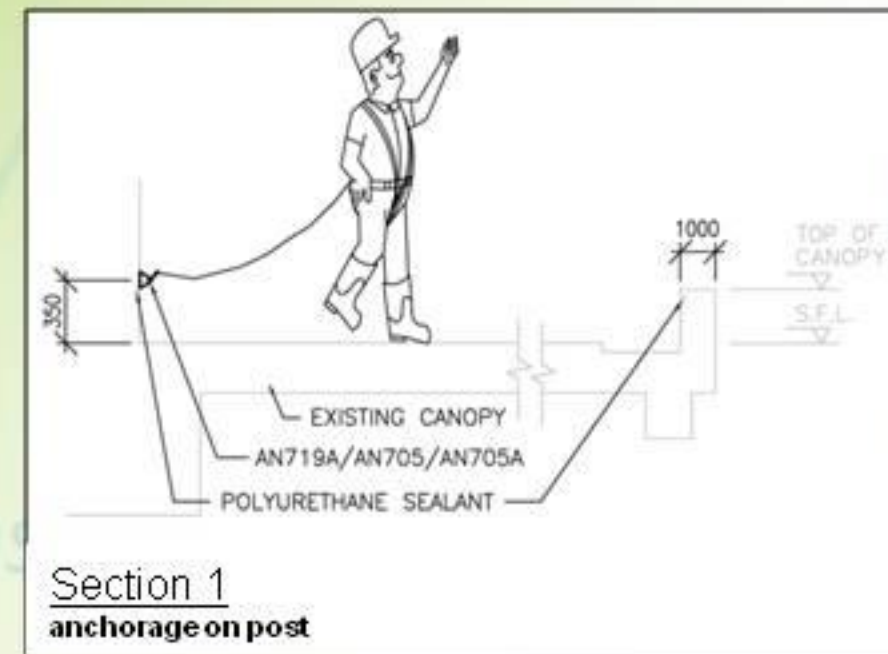
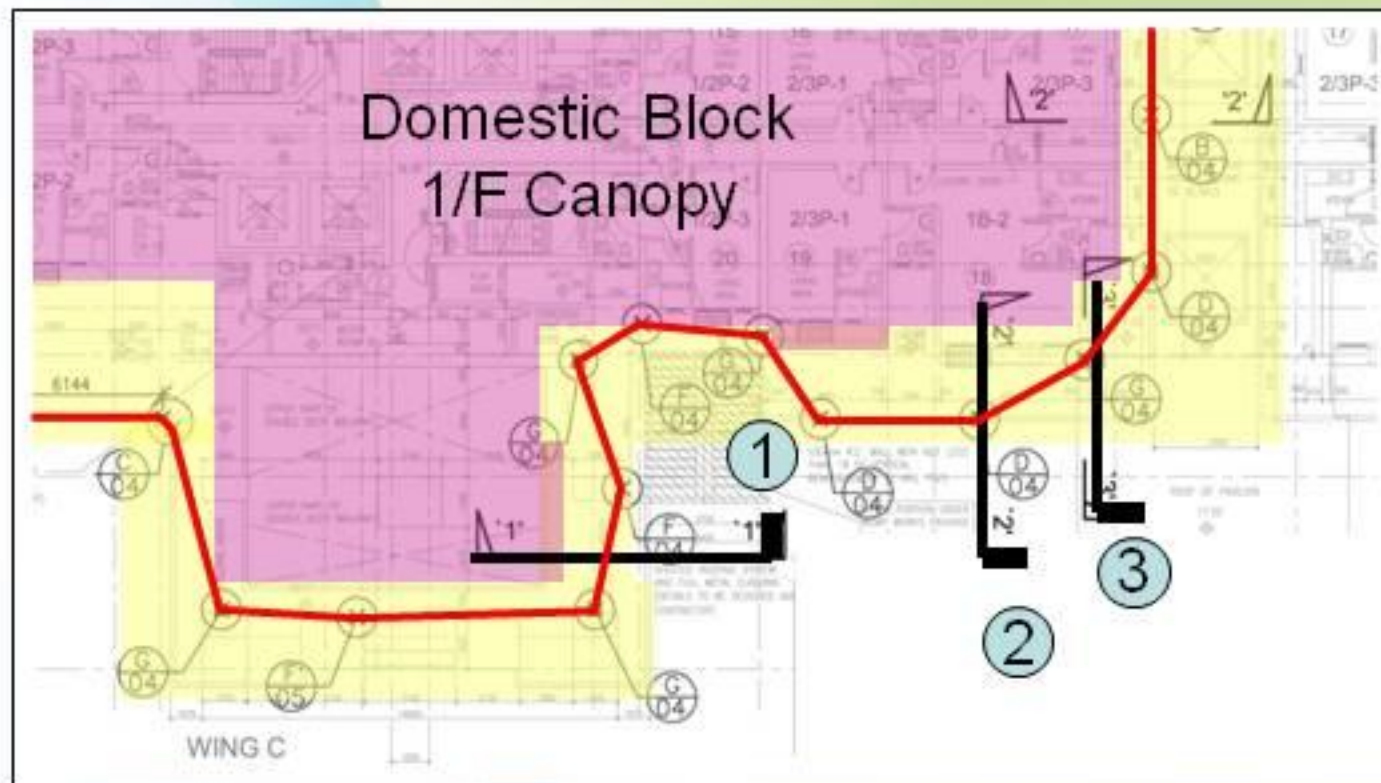


(b) Horizontal Lifeline Fall Arrest System Selection Criteria

- Evidence of Compliance with relevant EN standards
- Evidence of Manufacturer operating ISO quality system
- Major components to comply with the required material grades
- Certificate of manufacturer's authorised competent person for installation/testing
- Samples of components



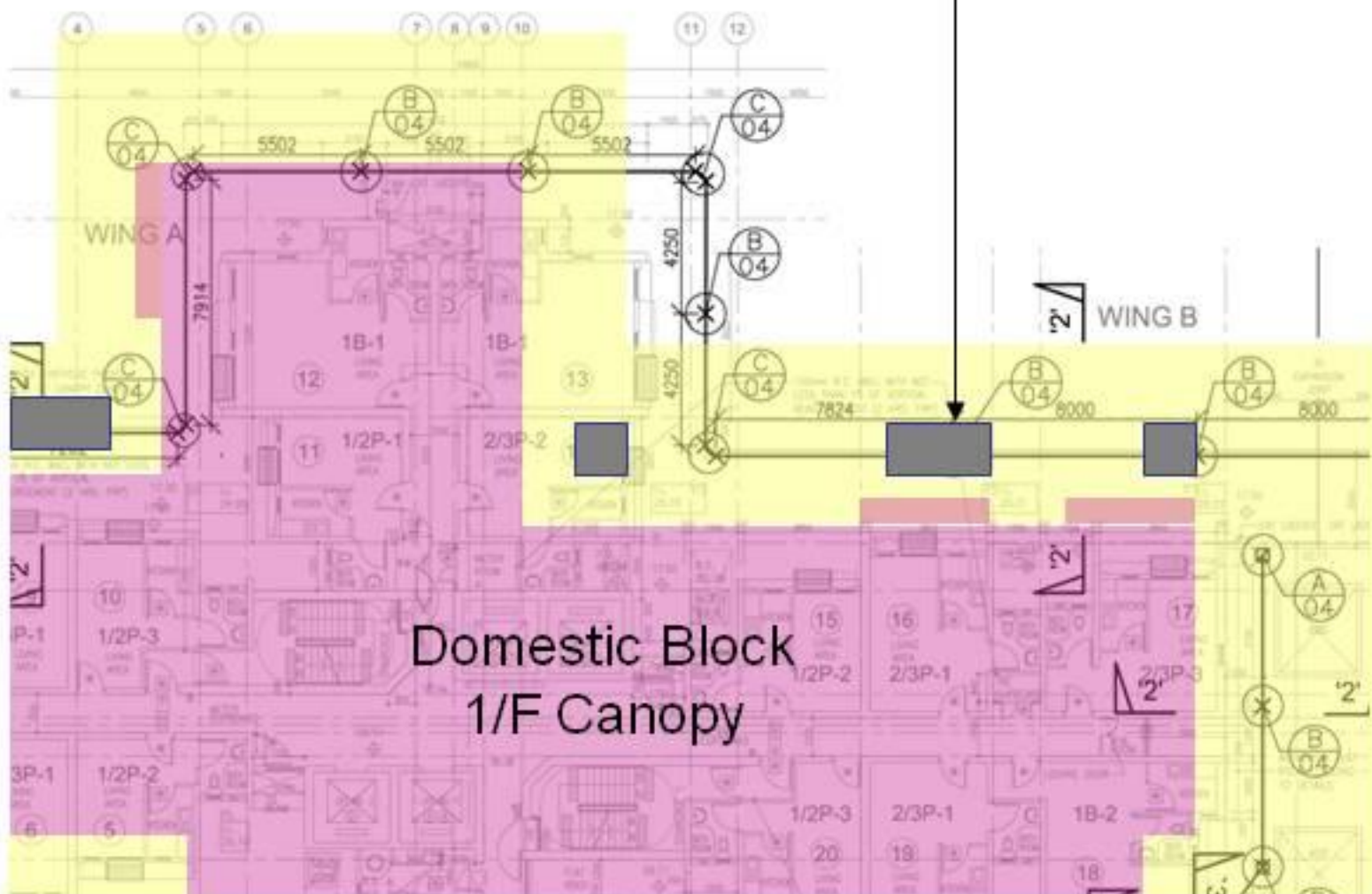
(b) Horizontal Lifeline Fall Arrest System Safe Arrest System at 1/F Canopy



(b) Horizontal Lifeline Fall Arrest System

Working Platform for Inspection Chamber at 1/F Canopy

- Cat Ladder
- Railing
- Working Platform



Inspection Chamber



Cat Ladder



Working Platform



Railing

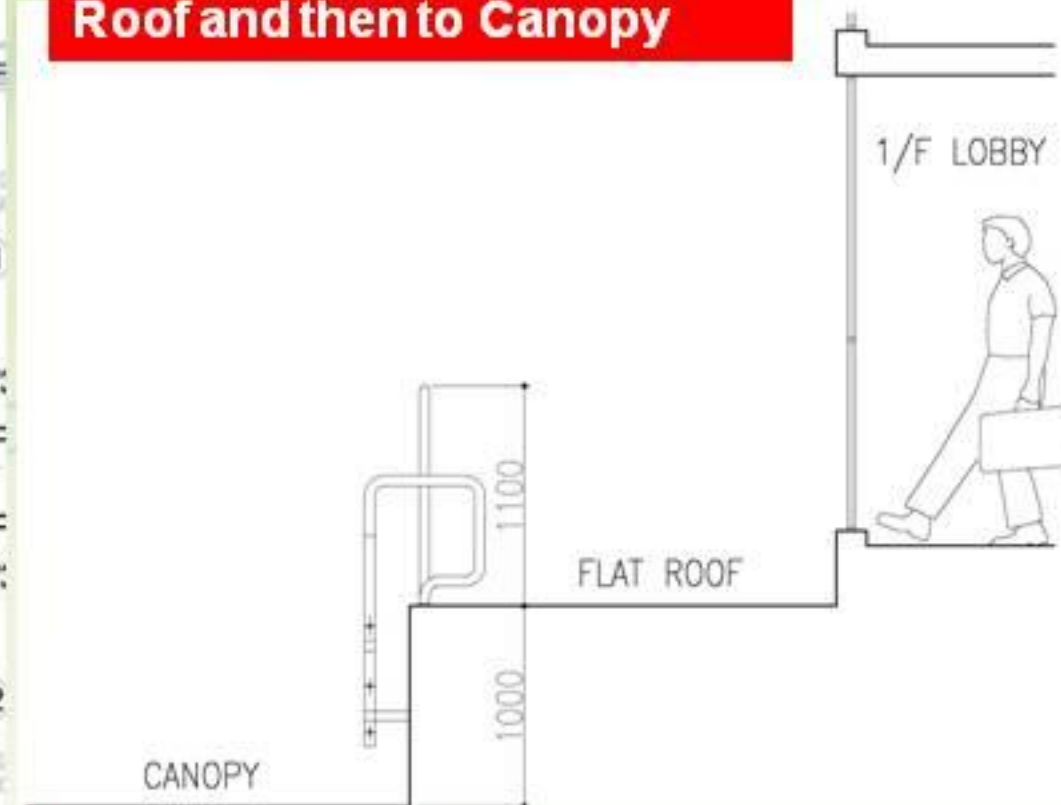
(b) Horizontal Lifeline Fall Arrest System Safe Access

Project Life Cycle

From cradle to cradle



From 1st Floor Lobby to Flat Roof and then to Canopy



Safe Access to Fall Arrest System at Canopy – From Flat Roof to Canopy

(c) Safe Maintenance Access for External Work at Green Roof, Covered Walkway and Footbridge

- **Proper and safe access, maintenance path with Horizontal Lifeline should be provided on green roof, covered walkway and footbridge for cleansing and maintenance**

(c) External Work Design and Provision

Green Roof

External Works Design Guide DCG-E-EW-126-3.5 on green roof

Small/Single-Storey Structures

(ii) *Provision of proper, easy and safety access should be incorporated for maintenance.*

(c) External Work Design and Provision Safe Access to Green Roof

Project Life Cycle



- Metal Scaffolding to Roof
- Safe Arrest System
- Automatic Irrigation System
- Choice of plant material with low maintenance species, e.g. drought tolerant type



Management

Construction

(c) External Work Design and Provision

Safe Maintenance Access to Vertical Greening

- 1 Hoisting Beam
- 2 Steel Scaffolding with Working Platform
- 3 Concrete Plinth for Setting of the Scaffolding
- 4 Automatic Irrigation System



(c) External Works Design and Provision

Covered Walkway

External Works Design Guide DCG-E-EW-101-7.3 on Access for cleaning & maintenance

Provision for proper, safe and easy access for regular cleaning & maintenance shall be considered.

External Works Design Guide DCG-E-EW-101-2.1 on Weather protection/Protection from falling objects

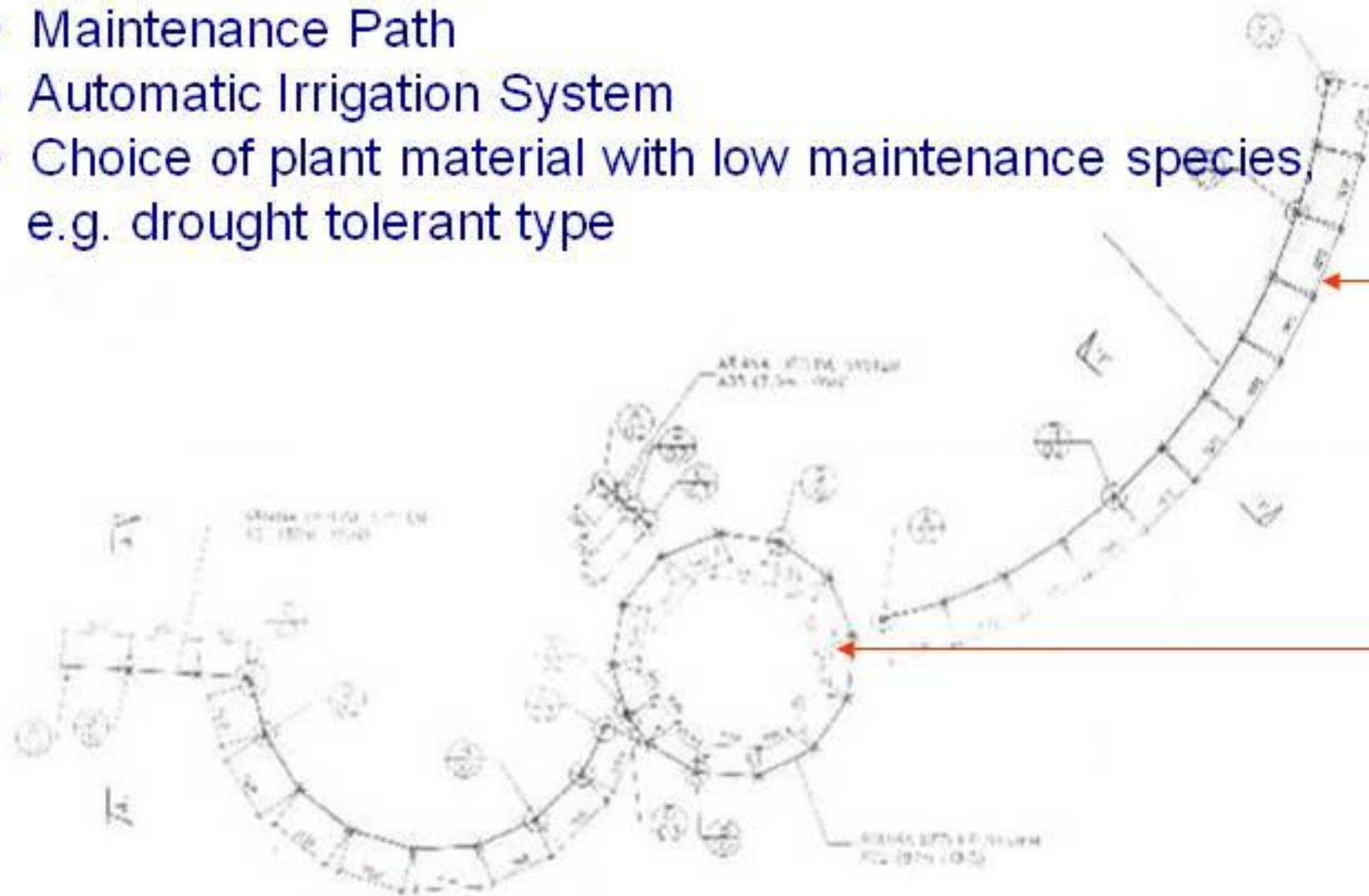
The covered walkway design shall fulfill the following requirements :

- *Weather protection*
- *Protection from falling objects*
- *Roofing materials (polycarbonate/acrylic sheets and rooflights) susceptible to damage by falling objects shall be located minimum 7.5m away from the main face of buildings ...*
- *The covered walkway shall connect to the main entrance of standard domestic blocks, providing a continuous link to and from all strategic points....*

(c) External Works Design and Provision

Safe Maintenance Access for Green Roof at Roof Top of Covered Walkway

- Safe Arrest System
- Maintenance Path
- Automatic Irrigation System
- Choice of plant material with low maintenance species e.g. drought tolerant type

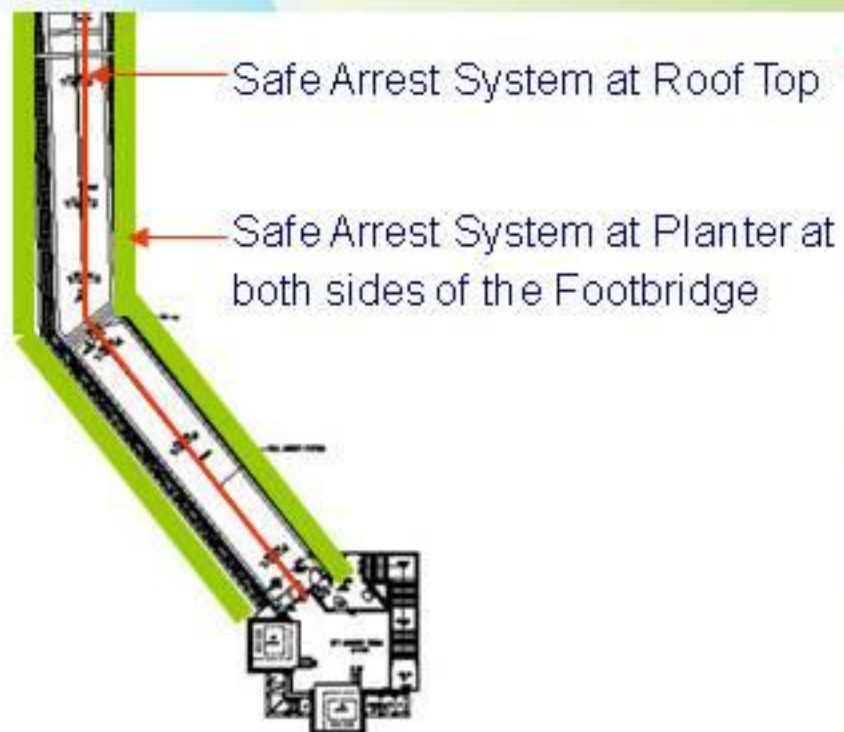


(c) External Works Design and Provision Safe Maintenance Access for Green Roof at Roof Top of Covered Walkway



(c) External Works Design and Provision Safe Maintenance Access to Footbridge

Project Life Cycle



Planning & Design for Safety

Use

(d) Safety Provision on Roof Top

- Railings shall be provided on top of the roof water tanks to prevent persons from falling when carrying out the maintenance work



Provisions for fixing gondolas

- Provision of parapet walls of adequate structural capacity at all roofs and proper planning of fixing points for tie-back wires



Safety platform for paths with services/pipes

- Demountable platform should be provided across and over utilities/pipes in narrow paths at roofs/canopies to ensure safe passage of workers



- Workers may be tripped down or slip down from the water pipes when they step on it in particular when they are carrying heavy equipments and the water pipes are not designed for sustaining persons from stepping on

(d) Roof Top Design and Provision

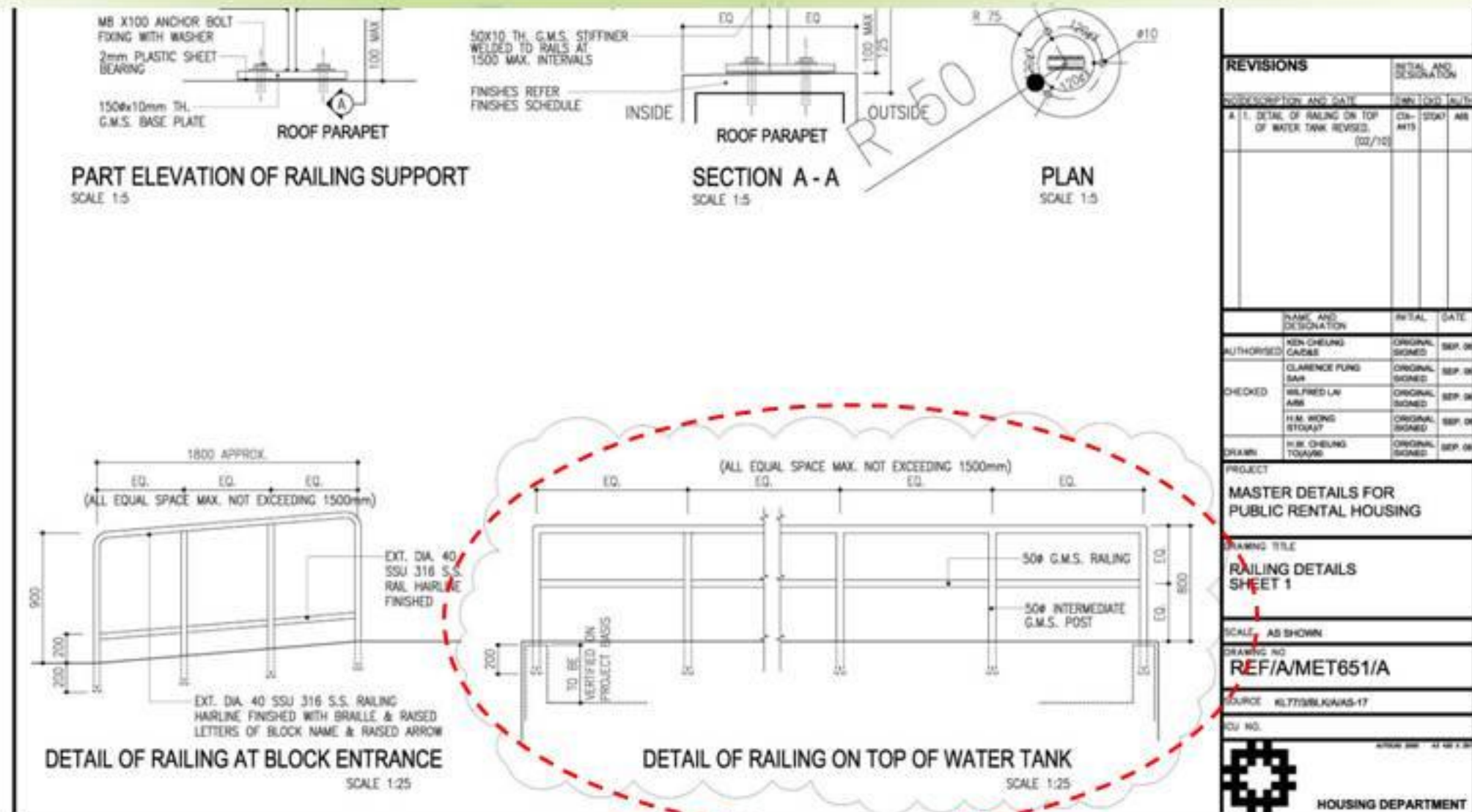
Model Client Brief for Public Rental Housing Developments (2009 Edition) Schedule 1 – Schedule of Finishes, Provisions and Fittings

2.8.2 (a)(ii) The location and routing of the services shall have railing (with non-paint finishes), safety barrier or fall arrest system at appropriated location to avoid risk of fall from height including roof top to water tanks and lift machine rooms.

2.8.2 (b)(ii) Allow adequate space for the services to run over the roof area avoiding the need for deck over the refuge areas.

(d) Roof Top Design and Provision Railings to Water Tank

Project Life Cycle



New Provision of Railing to Roof Water Tanks and G/F Sump Tanks

(d) Roof Top Design and Provision

Provisions for Future Installation of Gondola

Model Client Brief for Public Rental Housing Developments (2009 Edition)

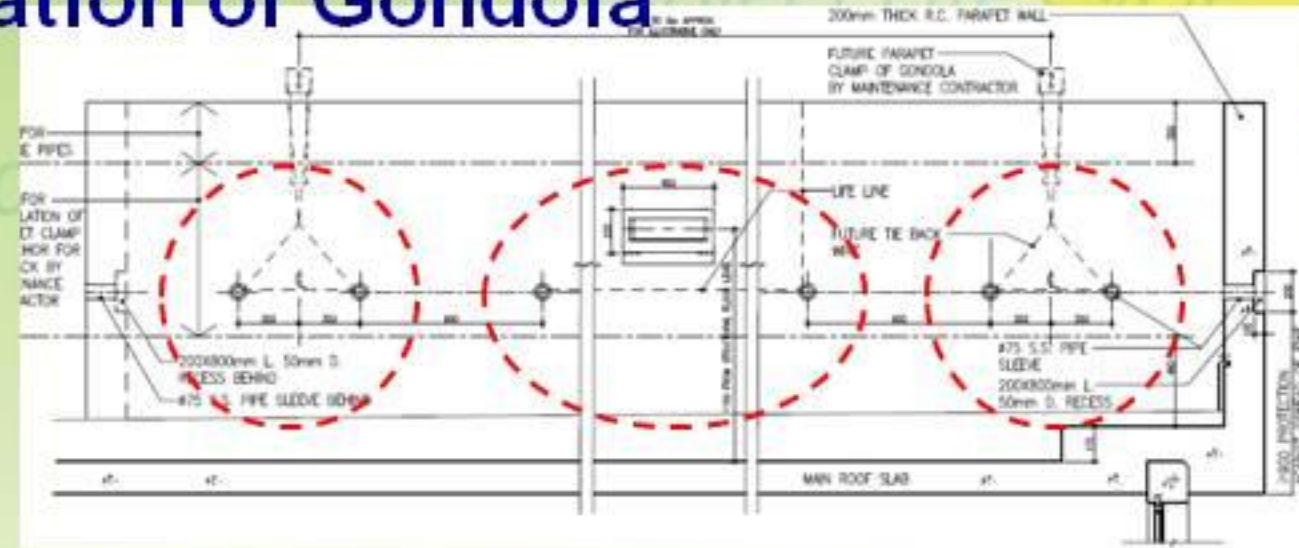
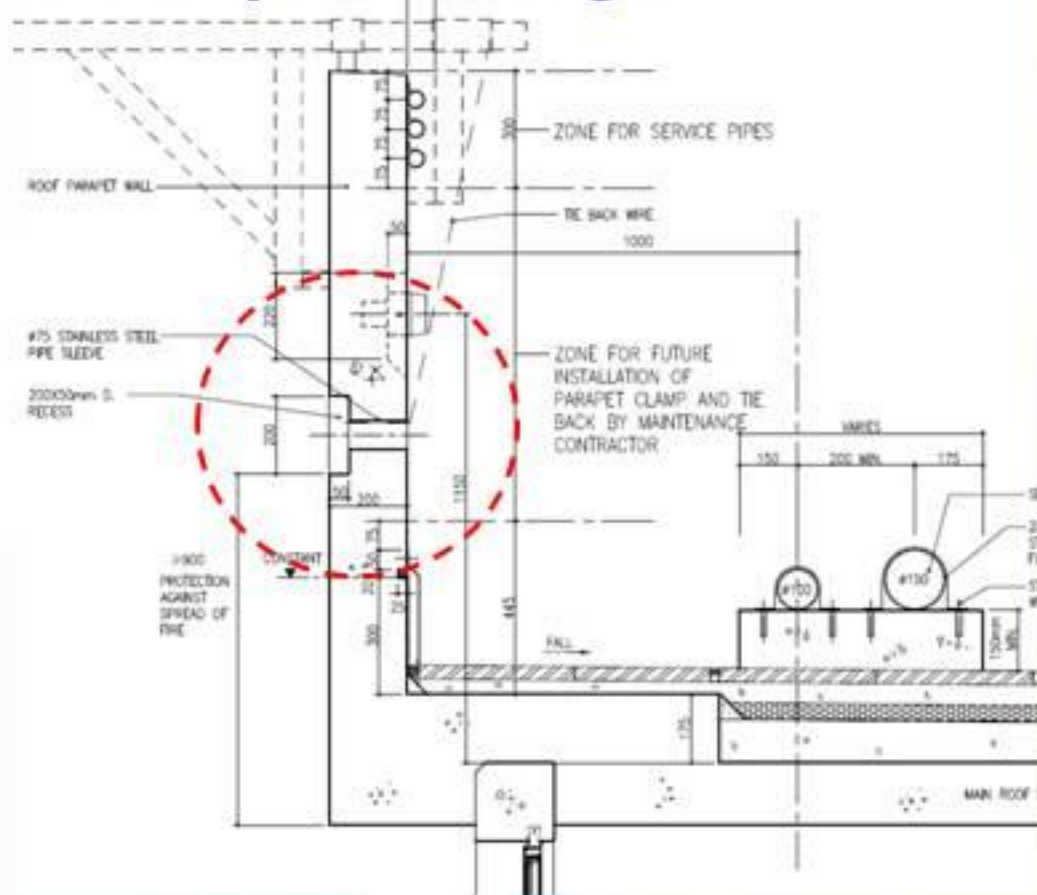
Schedule 1 – Schedule of Finishes, Provisions and Fittings

2.8.2 (c)(i) Allow proper access to the parapet(s) for future installation of gondola.

2.8.2 (c)(ii) Provide essential provisions for future installation of gondola for maintenance such as adequate structural strength for fixing the clamp, facilities for tie back and safety rope, electricity supply for powering the gondola.

2.8.3 (a) Provide one waterproofing 13A socket per wing at main roof level for future installation of gondola.

(d) Roof Top Design and Provision Provision for Future Installation of Gondola Parapet Design



New Tie Back System and Provisions for Safety Ropes under Trial

(f) Safety for Building Services Provisions

- Rooms designed for electrical service and water service shall be separated apart as far as practical either in horizontal or vertical direction that flooding at the water service room due to burst of water pipes shall not lead to electricity power interruption to the building



Electricity Meter Room is separated away from Water Meter Room

- **Pipe ducts shall not be provided by the side of the cable ducts. Flooding in the pipe duct due to burst of water pipe on any level shall lead to power interruption to floors below or the whole building as water may flow downward along the cable riser and ingress to the submain switches or the main switch**

- Water tank on top of the lift machine room / switch room shall be avoided



Lift Machine Room and Water Tank are placed side by side

- All underground cable duct leading to building blocks shall be sealed up to prevent leakage of town gas from outside ingressing to the building which will subsequent lead to explosion incidents similar to that occurred at Wai King Building in Ngau Tau Kok on April 2006

Before



After



(f) Safety for Building Services Provisions

Model Client Brief for Public Rental Housing Developments (2009 Edition) Schedule 1 – Schedule of Finishes, Provisions and Fittings

2.2.2(a) Architectural Provisions and Fittings

- vi. Avoid locate the electrical services rooms adjacent to any pipeduct of wet services such as FS pipes and water pipes.*
- vii. In case of design constraint in relocating the electrical services rooms away from the pipeducts of wet services, apply waterproofing to the partition wall(s) between electrical services room and pipeduct of wet services.*

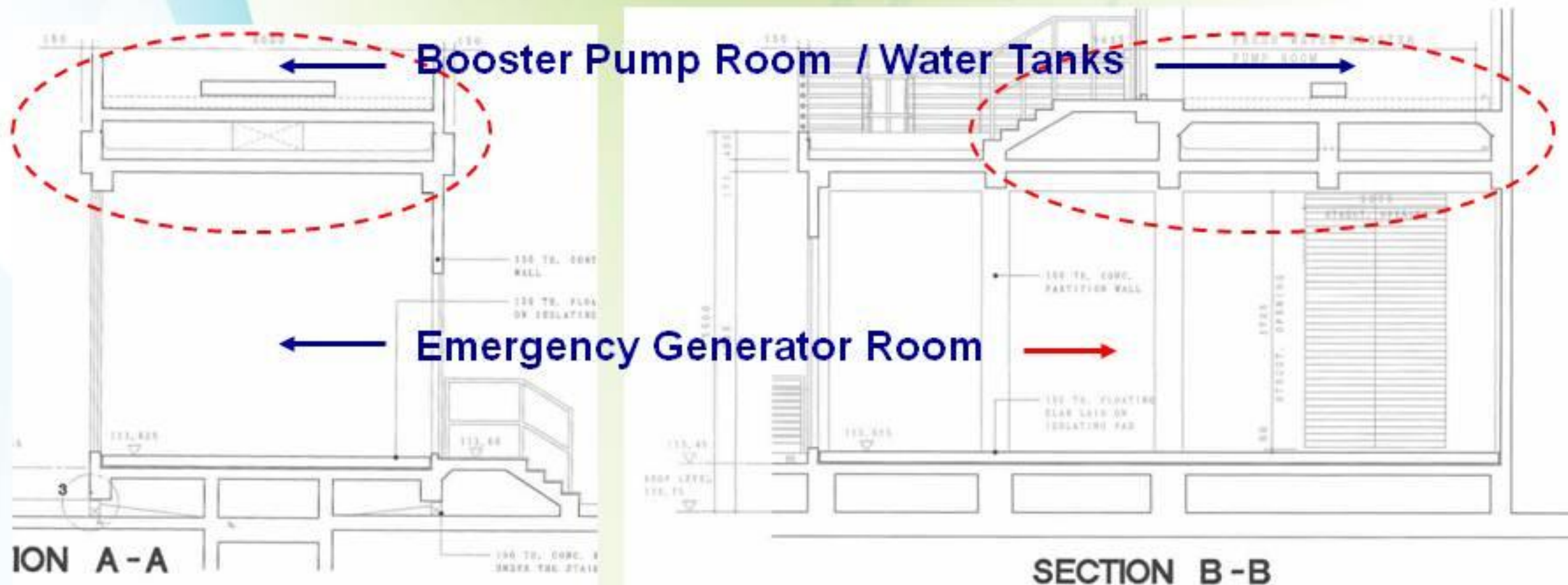
DCG-D 303 – 1.3.1(d) (Draft)

Avoid as far as possible, “wet” environment” such as water tanks and booster pump room above lift machine room and emergency generator room. If this cannot be avoided, double ceiling slab or water proofing with proper drainage should be provided above.

(f) Safety for Building Services Provisions Double Slabs Design

Project Life Cycle

From cradle to cradle



Double Slab Design

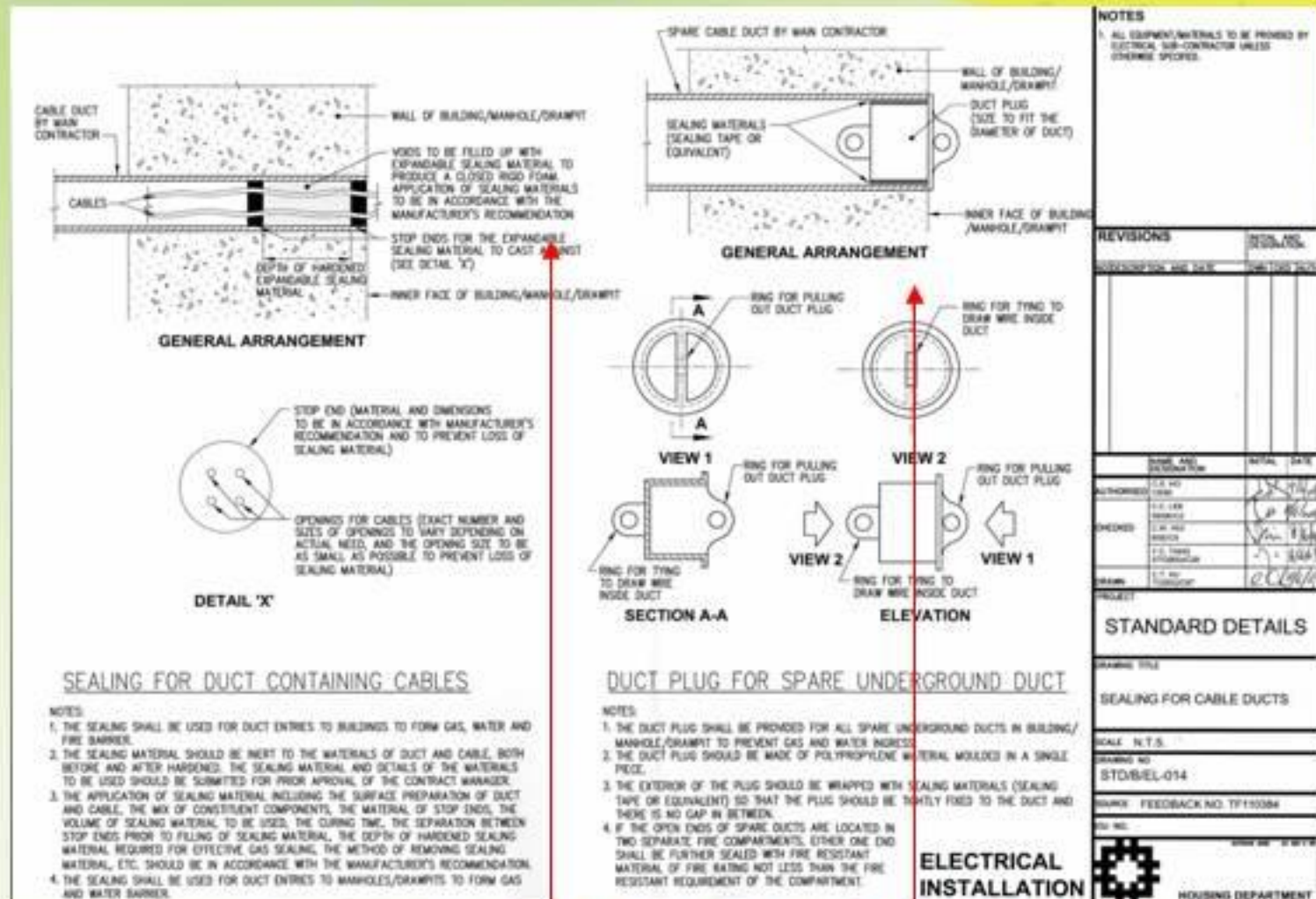
(f) Safety for Building Services Provisions

Master Details for Building Services (underground) - Gas Barrier

Prevent leakage of town gas from outside ingressing to the building to avoid explosion incident (e.g. Wai King Building in Ngau Tau Kok on April 2006)

Preventive Measures

- Void space of cable duct shall be sealed by expandable materials to form gas barrier.
 - The measure applies at where the duct passes through external wall of building/manhole/drawpit.
 - Sealant used shall be inert materials
-
- Spare duct to building/manhole/drawpit shall be sealed up by polypropylene duct plug wrapped with sealing material



(g) Slope

From cradle to cradle

- Safe access and railings for cleansing and maintenance should be provided

Maintenance



Use

(g) Slope

All design and provisions in compliance with 'GEO Guide 5' – Guide to Slope Maintenance

- Maintenance Manual to be provided.
- Stairway for safe access to be provided.
- Maintenance path and safety railing to be provided.



GEOGUIDE 5 Guide to Slope Maintenance

This announces the publication of the second edition of GEOGUIDE 5 (Guide to Slope Maintenance) by the Geotechnical Engineering Office (GEO) in 1998 which is available from the Government Publications Sales Centre.

2. Regular inspections and maintenance are essential to the continued stability of slopes and retaining walls. The GEOGUIDE 5 recommends standards of good practice for the maintenance of man-made slopes and retaining walls, also man-made features (eg surface cover and drains) provided to natural hillsides. The standards recommended should be adopted when specifying maintenance requirements in site formation submissions in pursuance of Building (Administration) Regulation 8(1)(bb)(E).
3. The GEOGUIDE 5 recommends that the designer of a slope or retaining wall should prepare a Maintenance Manual, to assist the owner(s) or parties required to maintain the land in understanding the maintenance requirements. It should include the information listed in Chapter 2 of GEOGUIDE 5. The requirement for submitting the Maintenance Manual at the certificate for completion (Form BA 14) stage should be specified in the site formation submission.
4. The Maintenance Manual should be submitted in duplicate together with the Form BA 14. Upon acknowledgement by the Building Authority, a copy of the Maintenance Manual will be returned to the authorized persons/registered structural engineers for onward transmission to the owner(s) or the parties for future maintenance of the development.
5. The second edition of GEOGUIDE 5 clarifies that the scope of the Engineer Inspections for Maintenance should include a review of previous Stability Assessment.
6. An abridged version of the GEOGUIDE 5 (Layman's Guide to Slope Maintenance - Second Edition) may be obtained free from District Offices or by writing to Chief Geotechnical Engineer/Slope Safety of the GEO.

(CHOI Yu-leuk)
Building Authority

Ref. : BD GR/GEO/11 (III)
First issue January 1996
This revision April 1999 (AD/LM, GGE)
Index under : GEOGUIDE 5
Slopes - maintenance manual
Maintenance manual - slopes

(h) Handover Stage

- **During handover, item of Safety concerns will be raised and highlighted to ensure safe maintenance and management.**

Management

Construction

Operation

Planning & Design for Safety

Use

Project Life Cycle

From cradle to cradle

Safety Considerations for
**Safety Considerations
for
End Users**

Management

Operation

Planning & Design for Safety

Use

(a) Inside flats – Bathing Facilities

- From previous provision of high bath tub to the recent sunken shower



(a) Inside flats – Windows

- Burglar grilles with open jaw at the bottom is hazardous and should be avoided



(a) Inside flats – Laundry Rack

- From the traditional provision of laundry pole holders to the provision of laundry racks at suitable height and locations to meet tenants' expectations



(a) Inside Flat Design and Provision Large Size Window

TECHNICAL GUIDE TO PRH DEVELOPMENTS DCG-D-1302 (MF-101) for MODULAR FLAT DESIGN REFERENCE (2008 Version)

Para. 10 General (c) Minimize the number and types of window design among the flat types. Avoid corner window and large glazing panel in domestic flats.

GENERAL NOTES OF IN-SITU ALUMINIUM WINDOWS :

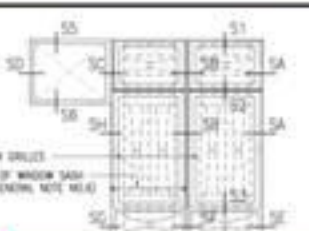
1. ALL ELEVATIONS OF WINDOWS ARE VIEWED FROM OUTSIDE.
2. SHOP DRAWINGS OF ALUMINIUM WINDOWS WITH STRUCTURAL CALCULATIONS SHALL BE SUBMITTED FOR CONTRACT MANAGER'S APPROVAL PRIOR TO MATERIAL ORDERING AND BUILDING FABRICATION.
3. ALL STRUCTURAL MEMBERS OF WINDOW SECTION SHALL HAVE A MINIMUM THICKNESS OF 2mm AND THE DEPTH OF THE REINFORCING SECTION SHALL NOT BE LESS THAN 20mm.
4. ALL ALUMINIUM WINDOW SECTIONS SHOWN ON DRAWINGS ARE FOR INDICATIVE ONLY. THE ACTUAL SECTIONS TO BE USED FOR INDIVIDUAL PROJECT SHALL REFER TO SUPPLIER'S SPECIFICATIONS.
5. THE INTERNAL AND EXTERNAL WALL FINISHES SHOWN ON DRAWINGS ARE INDICATIVE ONLY.
6. THE MAXIMUM WIDTH OF THE SASH FOR SIDE HUNG CASEMENT WINDOWS SHOULD BE 700mm.
7. THE TOP MEMBER OF WINDOW FRAME SHOULD HAVE A BUILT-IN PROTECTING FIN WITH A SHIP NO. PREVENT WATER INGRESS INTO THE WINDOW FRAME/CASING.
8. THE WINDOW GLAZING AREA SHALL MEET THE REQUIREMENTS OF BUILDING (PLANNING) REGULATIONS.
9. ALL GLAZING ARE TO BE 3mm NOMINAL THICK GLASS PANE(S) OR OTHERWISE STATED AND FIXED BY INTERNAL GLAZING BOLDS. THE GLASS PANE(S) SHALL COMPLY WITH BS6858 PART 1.
10. TYPING OF GLASS TO ALUMINIUM WINDOW FRAME SHALL COMPLY WITH BS 6858 (TABLE 13 & 14).
11. GLAZING SEALANT TO BE 300mm TYPE 'B' TO BE USED FOR FIXING GLASS PANE TO ALUMINIUM WINDOW.
12. SIZE & POSITION OF FINING LUGS SUBJECT TO APPROVED CALCULATION.
13. ALL GLASS FINING LUGS FOR IN-SITU WINDOWS TO BE 1.5mm THICK AND SHALL BE SLOTTED INTO WINDOW FRAME AT MAX. 300mm C/C AND 150mm FROM EDGE, THEN FIXED TO WALL BY APPROVED DRIVE PIN.
14. WINDOW SUPPLIER/INSTALLER IS REQUIRED TO SUBMIT STRUCTURAL CALCULATION FOR CONFIRMING THE PROPOSED FASTENING PIN OR ANCHOR BOLTS FOR WINDOWS CAN SAFELY RESIST THE WIND LOADING CONDITIONS, INCLUDING CYCLIC LOAD ALLOWANCE, OF INDIVIDUAL PROJECT AND FOR CONTRACT MANAGER'S APPROVAL.
15. E.M.S. STRUCTURAL REINFORCEMENT EXTENDED WITH 10mm AT OTHER END FOR INSPECTION SHALL BE INSTALLED WHERE NECESSARY.
16. SYNTHETIC RUBBER SEALANT TO BE APPLIED TO SMALL GAP AREAS OF ALUMINIUM WINDOW.
17. LOW MODULUS SILICONE SEALANT TO BE 300mm TYPE 'A' TO BE USED AT EXTERNAL PERIMETER AROUND OF ALUMINIUM WINDOW FRAME. (THE LOW MODULUS SILICONE SEALANT IS TO BE APPLIED AFTER THE APPLICATION OF THE MULTI-ACRYLIC PAINT AND SEAL THE PAINT.)
18. SIZE OF CARTRIDGE LUG TO BE 1.5mm THICK (MIN) & 20mm WIDE FOR IN-SITU WINDOWS AND TO THE SATISFACTION OF CONTINUITY OF PROTECTIVE CONDUCTOR TEST.
19. DUAL LOCK FOR ALL SIDE HUNG WINDOWS. CAN LOCK FOR ALL TOP HUNG WINDOWS.
20. SIZE OF LOCKING HANDLE TO SHUT DOWNING OF WINDOW GRILLE TO AVOID OBSTRUCTION OF WINDOW OPERATION.
21. POSITION OF DUAL LOCK MUST BE ADJUSTED TO AVOID CRASHING WITH WINDOW GRILLE.
22. TO AVOID LOCKING PROBLEM, CLIP-ON TYPE SETTING BLOCK IS PROPOSED FOR PREVENTION OF POSSIBLE JACKING OF WINDOW SASH AT ITS CLOSING POSITION, ESPECIALLY FOR LARGE SIZE OPENABLE SIDE HUNG WINDOW, EXCEEDING 600mm IN WIDTH.
23. APPROVED WATERPROOF BEADING MORTAR TO BE USED FOR FILLING OF THE GAPS BETWEEN STRUCTURAL OPENING AND ALUMINIUM WINDOW FRAMES OF IN-SITU WINDOWS.
24. FOR EQUIPMENTAL BONDING DETAILS, PLEASE REFER TO E.S. ELECTRICAL INSTALLATION DRAWINGS.

NOTES


1. SEE DRAWING NO. REFERENCE TO: REF:ALUMINUM WINDOW DETAIL OF IN-SITU ALUMINIUM WINDOW FOR LIVING ROOM, BEDROOM, KITCHEN AND BATHROOM.
2. FOR DETAILS OF WINDOW GRILLE, REFER TO DETAIL NO. REF:ALUMINUM WINDOW GRILLE.

REVISIONS

NO.	DESCRIPTION	DATE



IN-SITU ALUMINIUM WINDOW FOR KITCHEN



IN-SITU ALUMINIUM WINDOW FOR BATHROOM

6. THE MAXIMUM WIDTH OF THE SASH FOR SIDE HUNG CASEMENT WINDOWS SHOULD BE 700mm.

Notes:

1. SEE DRAWING NO. REFERENCE TO: REF:ALUMINUM WINDOW DETAIL OF IN-SITU ALUMINIUM WINDOW FOR LIVING ROOM, BEDROOM, KITCHEN AND BATHROOM.
2. FOR DETAILS OF WINDOW GRILLE, REFER TO DETAIL NO. REF:ALUMINUM WINDOW GRILLE.

REVISIONS

NO.	DESCRIPTION	DATE



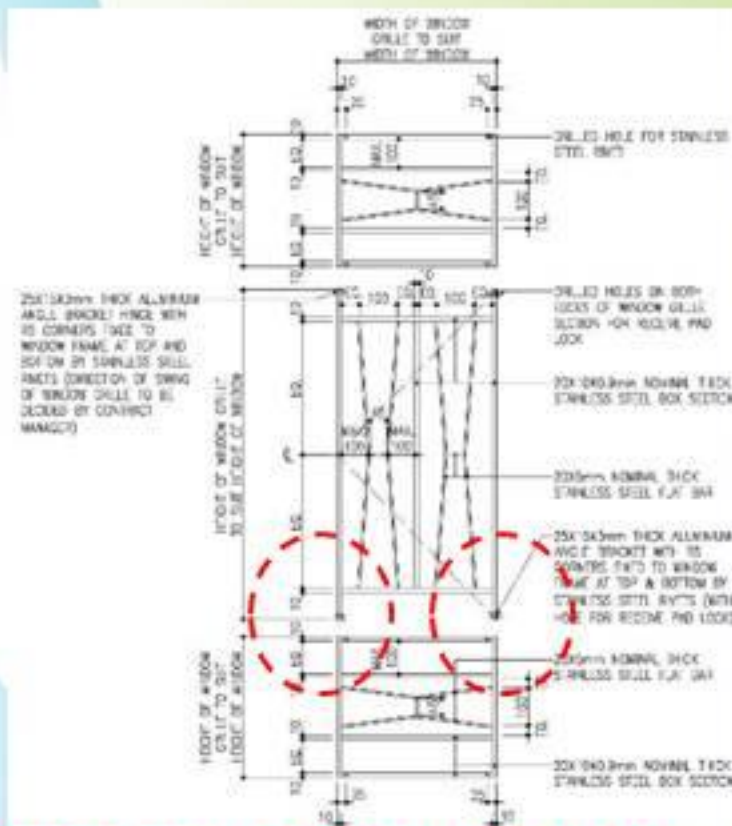
IN-SITU ALUMINIUM WINDOW FOR KITCHEN



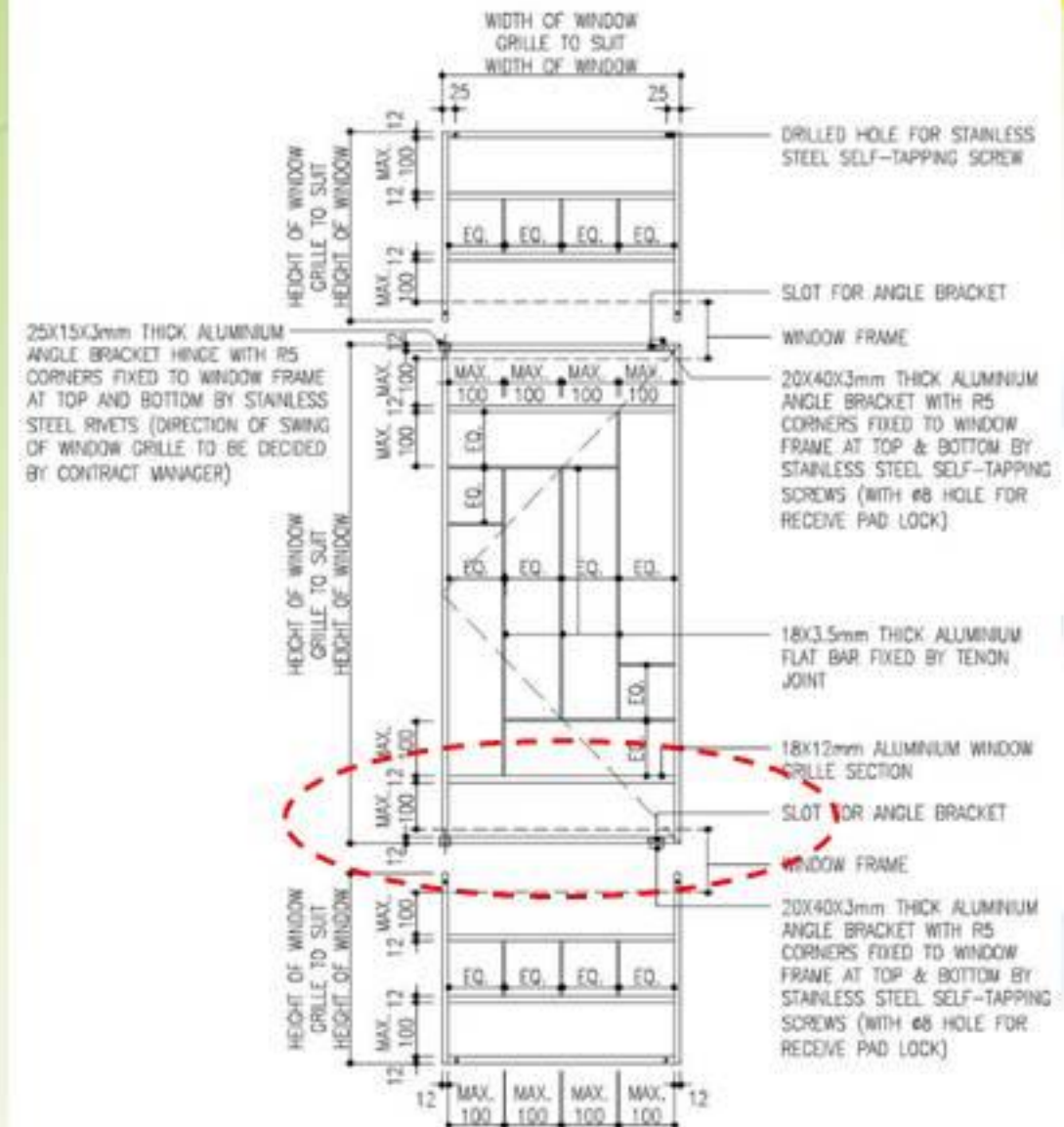
IN-SITU ALUMINIUM WINDOW FOR BATHROOM

New Window Grille Design without “Jaw” for Modular Flat Design

(a) Inside Flat Design & Provisions Window Grille Design

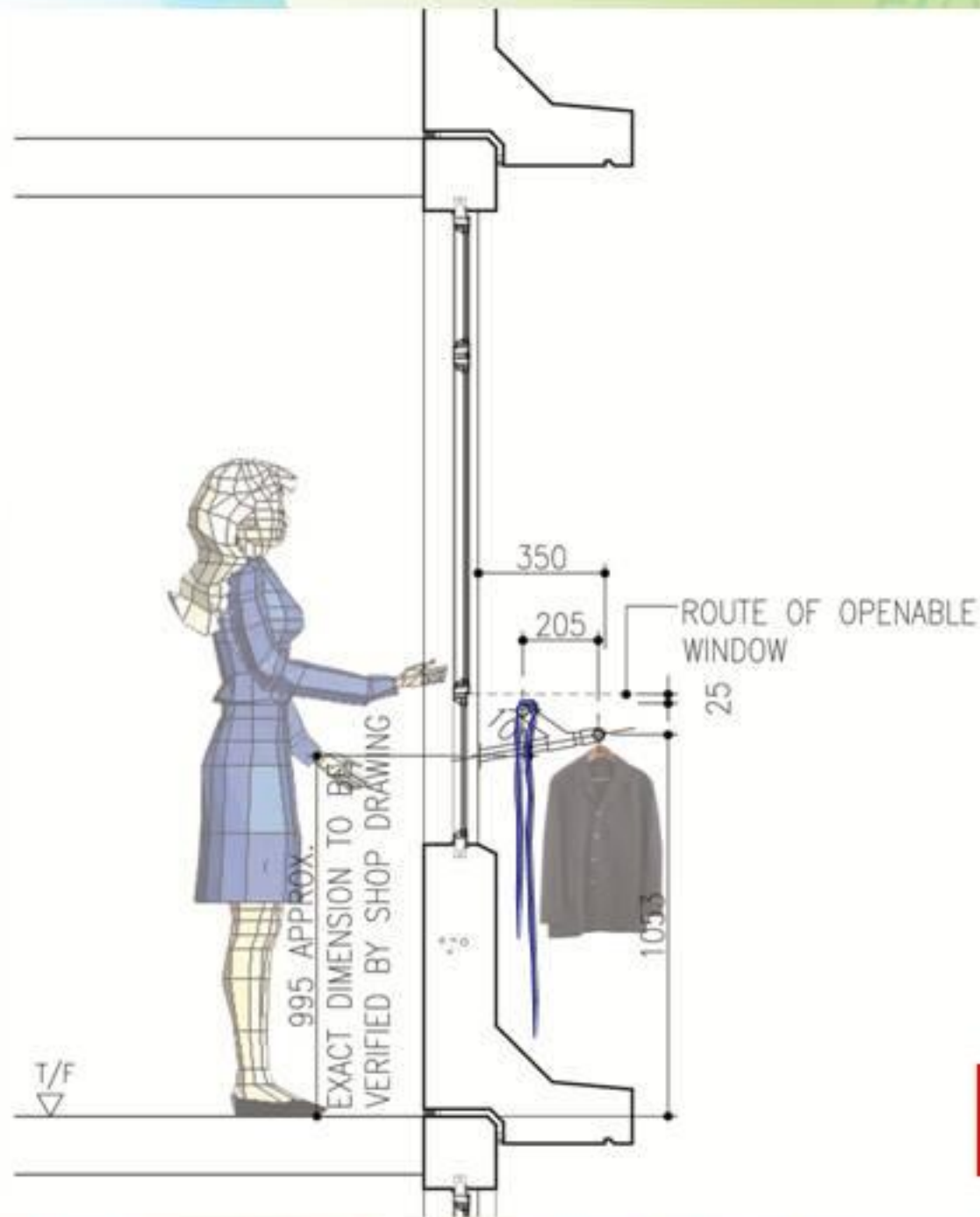


**Window Grille Design
with “Jaw”
for New Harmony Flat**



**New Window Grille Design
without “Jaw”
for Modular Flat Design**

(a) Inside Flat Design & Provisions Laundry Rack Design



Safe Access to Laundry Rack

(b) Common areas in buildings - G/F entrance door design

- From previous use of heavy gate with standard floor spring to current use of lighter design with safety chain and off-set floor spring



Heavy Gate



Lighter Gate



Safety Chain

(b) Common areas in buildings -

Homogeneous wall tile finishes at corridors

- Remove previous problem of adhesion failure by replacing with painting finishes



(b) Common Areas in Buildings

G/F Entrance Gateset Design

Current Doorway Design

Issued by CDMBI No. D07/03



請先按掣開門
PRESS DOOR
BUTTON FIRST

Signage

Stainless steel
etched plate
behind the door

Current Safety Measures to Fallen Gateset

- Offset pivot hinge floor spring used.
- Inspection panels added.
- Stainless steel screws / bolts, locknuts, thread locking adhesive, spring washer and safety pin specified.
- Reduced in height.
- Door lock status indicating light and signage added.

(b) Common Areas in Buildings

G/F Entrance Gateset Design

Off-set (Single Action) Floor System

Issued by CDMBI No. D07/03

Access Panel

Provide access panel for fixing the accessories, inspection and maintenance

Allen's screw, Nut & Spring Washer

Fix all straps with stainless steel Allen's screw, nut and spring washer



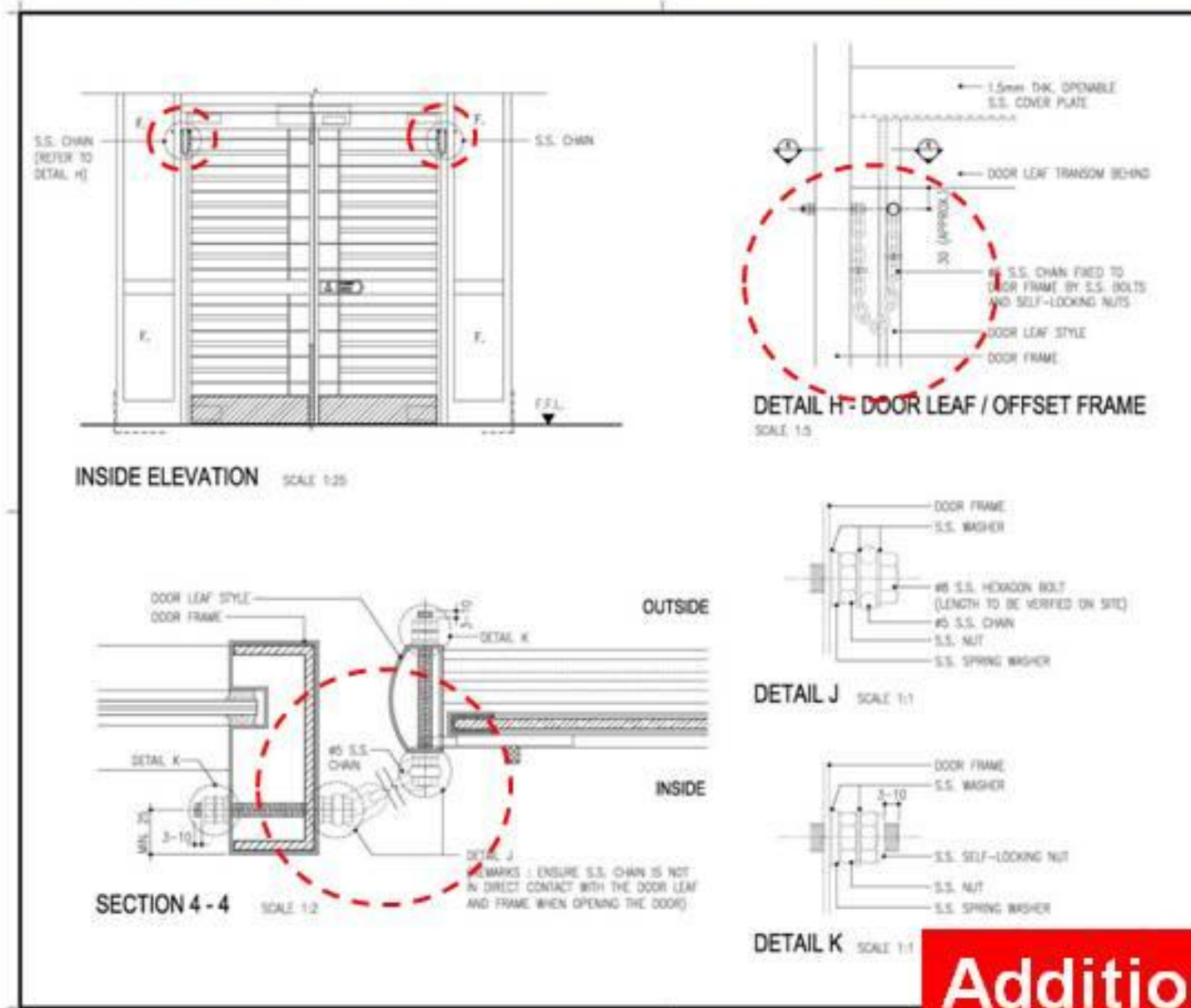
Corner Cap

Provide additional protection to pivot pin



**Current Safety Measures to
Fallen Gateset**

(b) Common Areas in Building G/F Entrance Gateset Design



Browse	
Addition of S.S. Chain to Metal Gate at Main Entrance of Ground Floor	
Feedback No.	TF111934
Feedback Date	26/05/2009
Antic./Actual Close-out Date	02/06/2009
Feedback Source	LAI, KWOK WAI WOLFRED (A/66)
Category	Architectural
Location(Estate)	N/A
Non Domestic	N/A
Domestic	N/A
Specification	N/A
Feedback Details	Any safety measures in responding to the recent fatal accident involving a falling security gate at the Social Welfare Department (SWD)'s Hang Ngai Manufacturing and Hostel in Hung Hom on 6.5.2009
Feedback Attachment	N/A
Feedback Response Details	
Status	Completed
Response	<p>***** by clarencefung *****</p> <p>BACKGROUND There is wide media coverage on a recent fatal accident involving a falling security gate at the Social Welfare Department (SWD)'s Hang Ngai Manufacturing and Hostel in Hung Hom on 6.5.2009.</p> <p>RESPONSE There have been a series of enhancements to metal gate design at G/F main entrance in 2003 under CDMB No. D07/03, such as new gateset design lighter in weight, off-set spring hinges and access panel for easy inspection, all fixings with allen screws with spring washers and nuts etc.</p> <p>Response With immediate effect, a stainless steel (s.s.) chain is now further proposed to be added to each gate leaf at high level as indicated in Master Details drawing no. REF/A/MET206 in accordance with the SQM decision dated 8.5.2009. Should the gate leaf be dismounted from the frame accidentally, the s.s. chain can pull it back from further falling.</p> <p>ACTION Project Teams for projects at design / tender stages and Contract Managers for all building contracts shall make reference to the above drawing for metal gate at G/F entrance with immediate effect. Relevant construction details will be provided in new HD-BIM library and the next review of Master Details respectively. For projects at completion and MP stage, regular inspections should be carried out in accordance with the Guideline and Checklist for Installation of Floor Spring System at Construction Stage/ Maintenance Period Stage Form (DASH-FS006 (01/04/2009)).</p>
Response Attachment	<ol style="list-style-type: none"> 1. TF111934-REF A MET206.pdf (260 KB) 2. DCMP-F777B-TF111934.doc (33 KB)

**Additional Safety Measures to
Fallen Gateset – stainless steel
chain fastening the leaves to
the frame**

(c) Pedestrian and Vehicular Circulation

- Segregation of pedestrian and vehicular circulation



- Avoid placing near turning point of vehicular traffic
- Refuge island is recommended
- Suitable road humps provided at strategic points

(c) Pedestrian and Vehicular Circulation

From cradle to cradle

- Cycle track separated from estate road/EVA as far as possible to ensure safety
- Bicycle parking space on periphery as far as practicable

Maintenance

Management

Construction

Operation

Planning & Design for Safety

Use

(c) Pedestrian and Vehicular Circulation

Vehicular Traffic

External Works Design Guide DCG-E-EW-112-8.1 & 8.3 on Access, Vehicular Movement and Design of Roads and EVAs within Housing Department Estate

8.1

The provision of road humps, ..., is fully described in [the Code TPDM Vol.2](#) Chapter 5,including...Use and location of road humps etc.

8.3

...exact location of these humps, Contract Managers are to liaise and agree with ... EMD prior to commencement of the road work.

Common Facilities Design Guide DCG-E-CF-103-3.3(c) on Guidelines on Refuse Collection

...access route for the RCV is to be clearly defined by suitable choice of materials...which clearly differentiate the vehicular access from the pedestrian areas of the estate

(c) Pedestrian and Vehicular Circulation Bicycle Parking in Housing Estates

External Work Design Guide

DCG-E-W-119-3.1 & 3.2 on Bicycle Parking

3.1

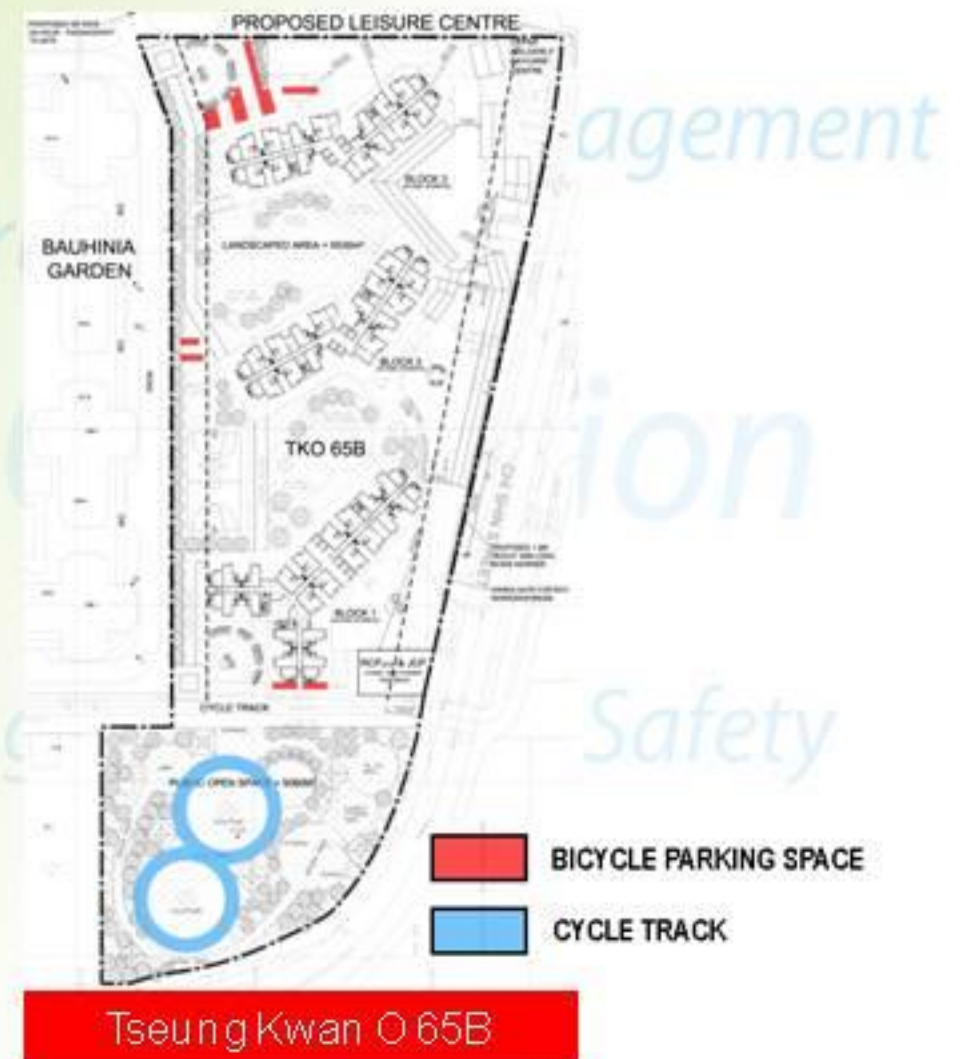
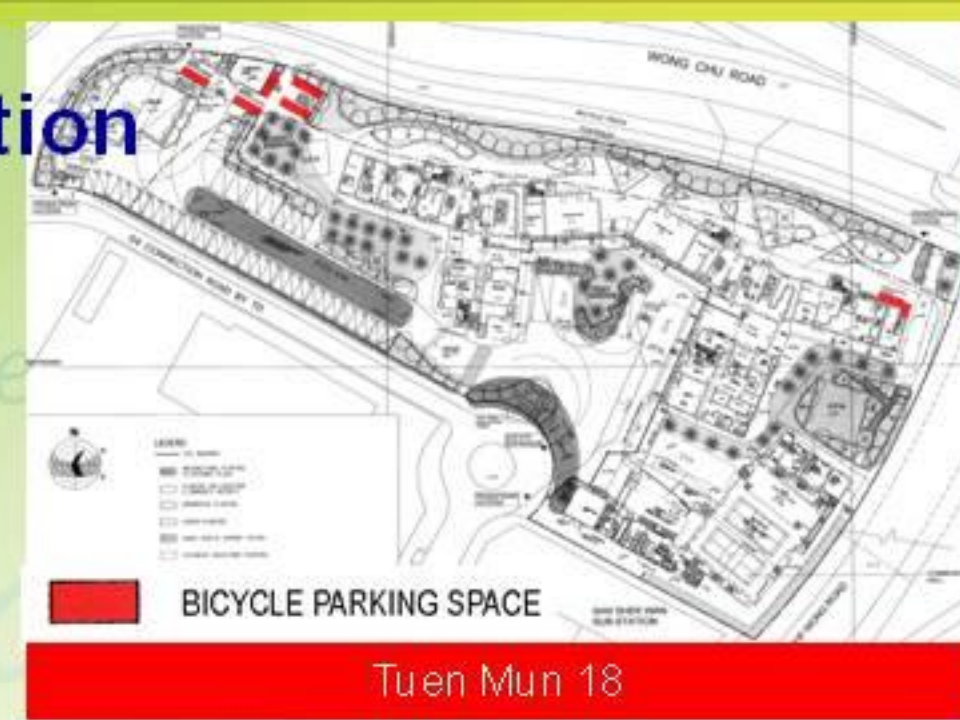
Bicycle parking shall be provided relatively conspicuous in areas within the estate to discourage vandalism or theft.

3.2

Better to integrate bicycle parking into the estate design such as reserving areas at the gable end wall of buildings or along the perimeter of estates.

Cycle Track

Clear delineation from vehicular/pedestrian traffic.



(d) External Areas – Playground facilities

- Location should be far from estate road or EVA to ensure children safety
- Avoid types with potential danger like rotating equipment with seats rather than platform, equipment with spring foot
- Posting conspicuous warning sign/notice



(d) External Areas – Non-slip floor finishes & Tactile Guide Path

- Use of finishing materials of adequate anti-slip character in particular areas with ramping surfaces
- Attention should be given to the proper siting of visually impaired persons facilities like tactile guide path



(d) External Areas – Weather protection/Protection from falling objects

- Covered walkways and/or canopies should be provided continuously without disconnection within the whole estate to protect pedestrians from bad weather/falling objects. Significant improvement is noted in recent developments compared with those built at older times



(d) External Areas – Uneven ground or inconspicuous steps

- Provide nosing tiles with contra colour for steps



- Avoid uneven ground or inconspicuous steps
- Grasscrete is not recommended at location with heavy pedestrian flow

(d) External Areas – Playground facilities

External Work Design Guide DCG-E-W-106 on General Principles

- 2.1 For supervision, children's play areas shall be separated from traffic and have some form of containing boundary to define the areas.*
- 2.3 Uncovered children's play areas shall be located minimum 6m and 5m away from domestic blocks and from gable end wall (without window openings above) respectively.*

External Work Design Guide DCG-E-W-106 on Selection & Layout/planning of Play/Fitness Equipment

- 3.5 Apart from available space and budget, the economic justification of selecting a particular play equipment should be determined on factors such as play function, age group of users, play value rating, design hazard/injury risks, etc.*
- 4.2 Play Equipment agents... must provide an endorsement on their plan by Approved Playground Safety Inspector, that the required safety margins for each item of equipment and relevant safety standard (ASTM/BSEN) have been met.*

External Work Design Guide DCG-E-W-106 on Warning Sign

- 6.1 Suitable warning signs ... shall be provided to all play areas. The signs shall be located at prominent locations e.g. at the entrance to the playground or adjacent to play equipment. The wordings of the signs shall state the suitable age range of persons using the equipment and the age range of children using the equipment where adult supervision is necessary.*

(d) External Work Design and Provision Provisions For The Visually Impaired

External Works Design Guide DCG-E-EW-127

2.1

Visually impaired have their special needs and appropriate facilities shall be provided to assist them to travel safely and independently

2.2

... Provisions such as audio signals, Braille and tactile information, tactile guide paths and tactile warning strips would help them.

2.5.4

Level changes along the tactile guide path shall be avoided as far as possible....ramps, stairs and dropped kerbs fulfilling the design requirements in paragraph 3.2 to 3.4 can be provided.

3.3.1

Stairs shall comply fully the obligatory design requirements of the DMBFA including the following to assist the visually impaired residents ... iv. Non-slip nosing in contrasting colour.



Multi-sensory Map



Tactile Guide Path



Non-slip nosing in contrasting colour

(d) External Work Design and Provision

Special features / Paving to Pedestrian Area

External Work Design Guide DCG-E-EW-105-7.3 on Water Features

....BARRIER TO THE POOL MUST BE PROVIDED

....Warning danger signs to be provided.

Similar safety design guides could be developed to avoid possibility of encouraging climbing by children for special features eg irregular rock features.

External Work Design Guide DCG-E-EW-113-2.1 & 2.3 on Paving to Pedestrian Area

2.1

The paving materials shall be ... Non-absorbent, durable, non-slippery and easy to clean. Avoid porous floor tiling.

2.3

Paving blocks laid on sand shall not be used for sloping ground at gradient steeper than 1:10.



Thank you