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SOLUTION DESIGN

▲ MUST BE READ AND UNDERSTOOD PRIOR TO USE

SYSTEM DESIGN
SYSTEM INSTALLATION



November 2009



INTRODUCTION

This CAD render illustrates proprietary Roof Access and Fall Protection products/ systems - designed and manufactured in accordance with relevant AS/NZS Standards, OHS Acts and Regulations, Codes of Practice and Guidelines.

Trademarks and product codes refer to standard Sayfa products and systems.

ACCESS PROTECTION SYSTEMS

- 1/ Sayfa LD402 - Ladder Support Bracket with Katt LD450 - Custom Portable Ladder
- 2/ Vista LD20 - Fold Down Access Ladder
- 3/ Katt LD5 - Vertical Line Access Ladder
- 4/ Katt LD17 - Vertical Cage Access Ladder with Change of Direction Platform
- 5/ Katt LD1 - Mini Access Ladder
- 6/ Katt LD15 - Angled Cage Parapet Access Ladder
- 7/ Alto ST575 - Step Ladder with Handrails
- 8/ Alto ST565 - Step Bridge with Handrails
- 9/ Skydore LD493 - Roof Access Hatch

FALL PROTECTION SYSTEMS

- 10/ 3 Sixty AP130 - Fall Arrest Anchor
- 11/ Travel 8 SL1 - Top Mount Static Line
- 12/ Travel 8 SL2 - Wall Mount Static Line
- 13/ Sentry GW2 - Side Mount Guardrail
- 14/ Sentry GW3 - Roof Mount Guardrail
- 15/ On-Trak GW10\11 - Fibre Walkway (Grey or Yellow)
- 16/ Sayfa GW395 - Raised Skylight Protector

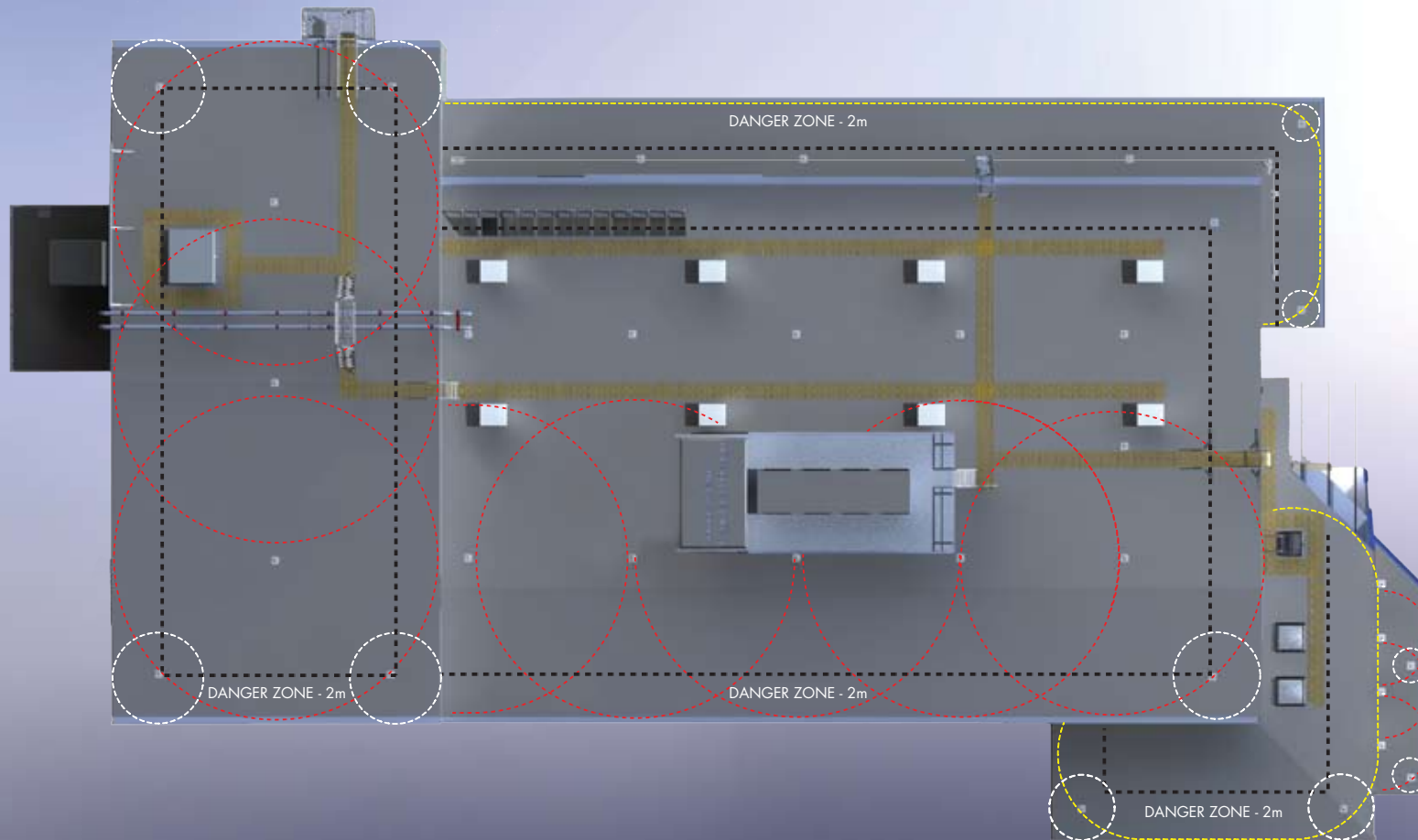
ACCESS THE SAYFA® WAY...

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IMPORTANT INFORMATION

What mandatory OHS legislation and advisory documentation must be complied with?

- 1/ State and Territory Governments - Building Acts and Regulations.
- 2/ Commonwealth, State and Territory Governments - OHS Acts and Regulations.
- 3/ Federal and State Workcover or Workplace Authorities - OHS Codes of Practice, Guidance Publications and Industry Guides.
- 4/ Australian Government National OHS Commission – NOHSC Act 1985 (Commonwealth); National Standard for Construction Work NOHSC:1016 (2005); National Standards, Codes of Practice and Guidance Material.
- 5/ Industry Standards and Codes of Practice.

When is Access and Fall Protection required?

An approved proprietary system is required where access to an elevated area above 2.0 metres and/or within 2.0 metres of a “fall edge” is possible, and wherever there is any risk of a fall, causing injury or death.

LAYOUT CRITERIA

KEY

- - - - - Primary Anchor Working Area
- - - - - Diversion Anchor Working Area
- - - - - Primary Static Line Working Area
- - - - - 2 metre Danger Zone

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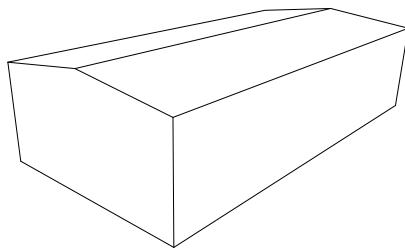
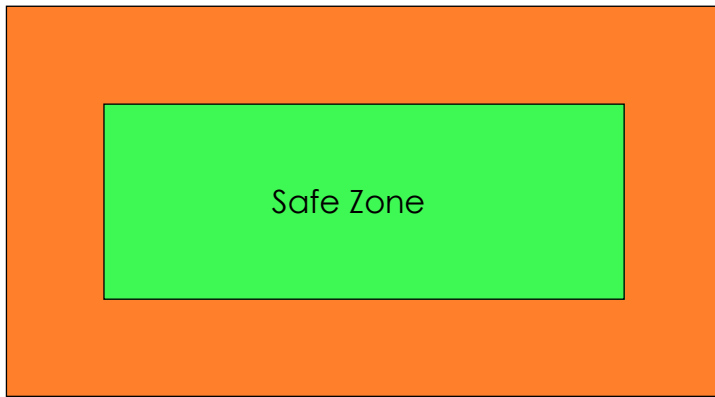
*Drawing not to scale. For illustrative purposes only.

Angle of Slope

(Critical Angle)

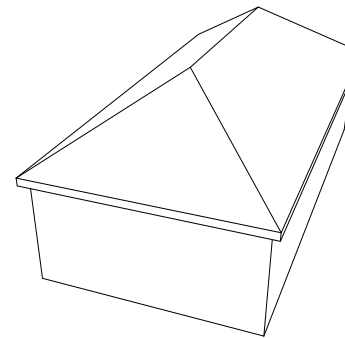
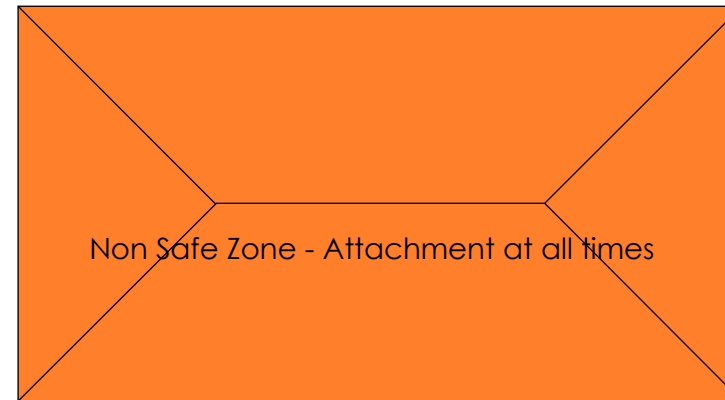
Roof Slope : 1 - 15 Degree Slope

No fall protection required when further than 2m from fall edge*



Roof Slope : 16 - 40 Degree Slope

Fall protection is required at all times (Attachment at all times)
Anything over 40° must be Abseil/Twin Rope

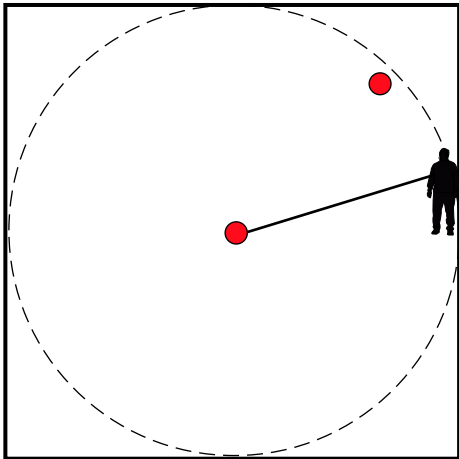


* A risk assessment must be done before any work at height.
Fall protection may be required even when further than 2m from a fall edge.

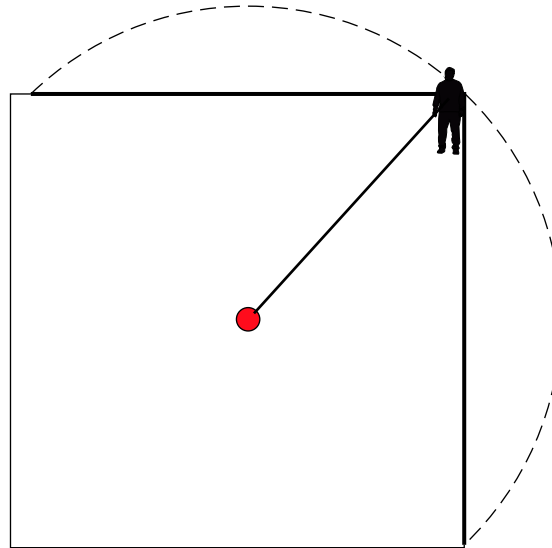


Anchor Positioning

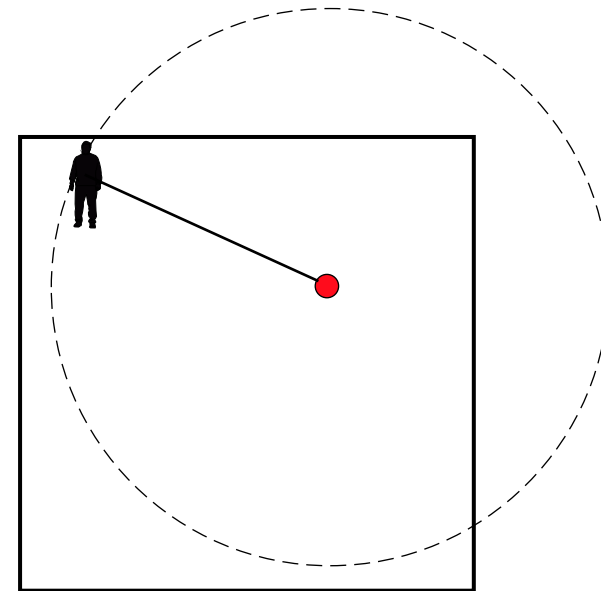
Correct anchor positioning is critical to avoid pendulum effect.



Correct Anchor Positioning and Ropeline Length



Incorrect Anchor Layout (No anti-pendulum anchor)

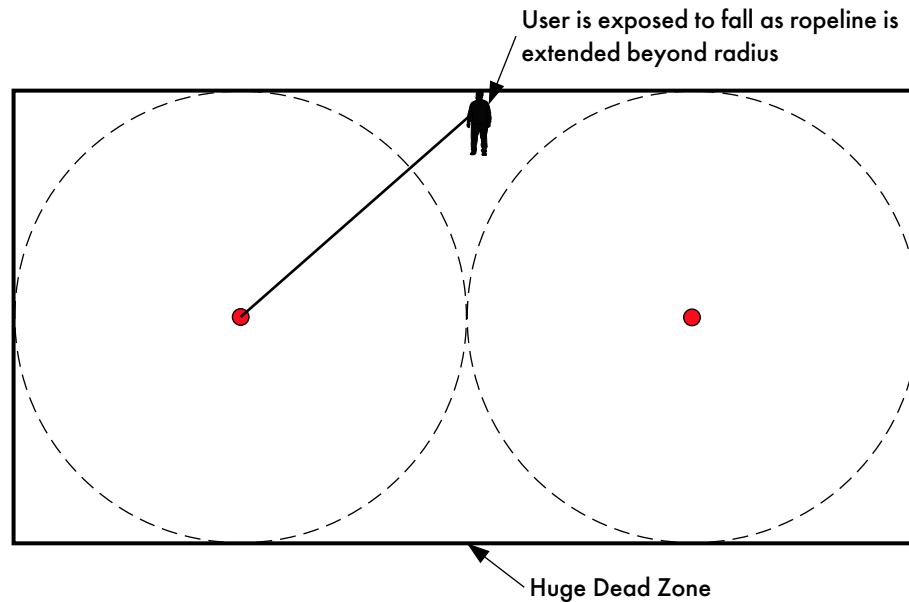
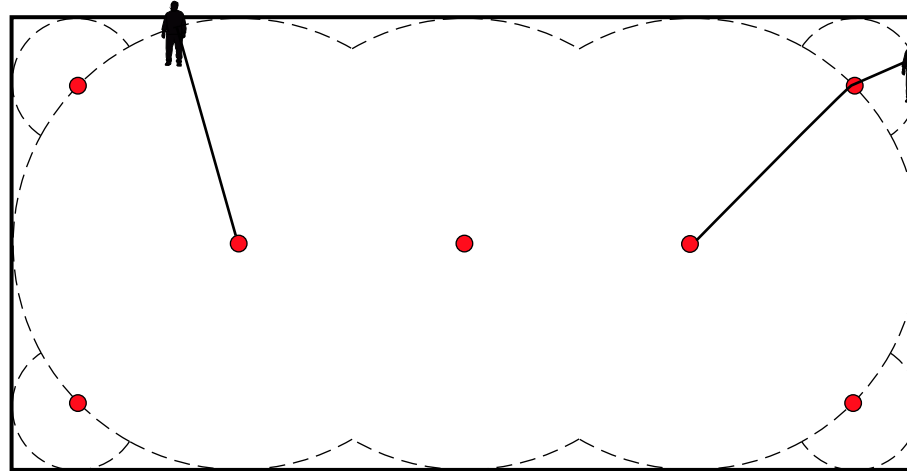


Incorrect Anchor Layout (Wrong Positioning)



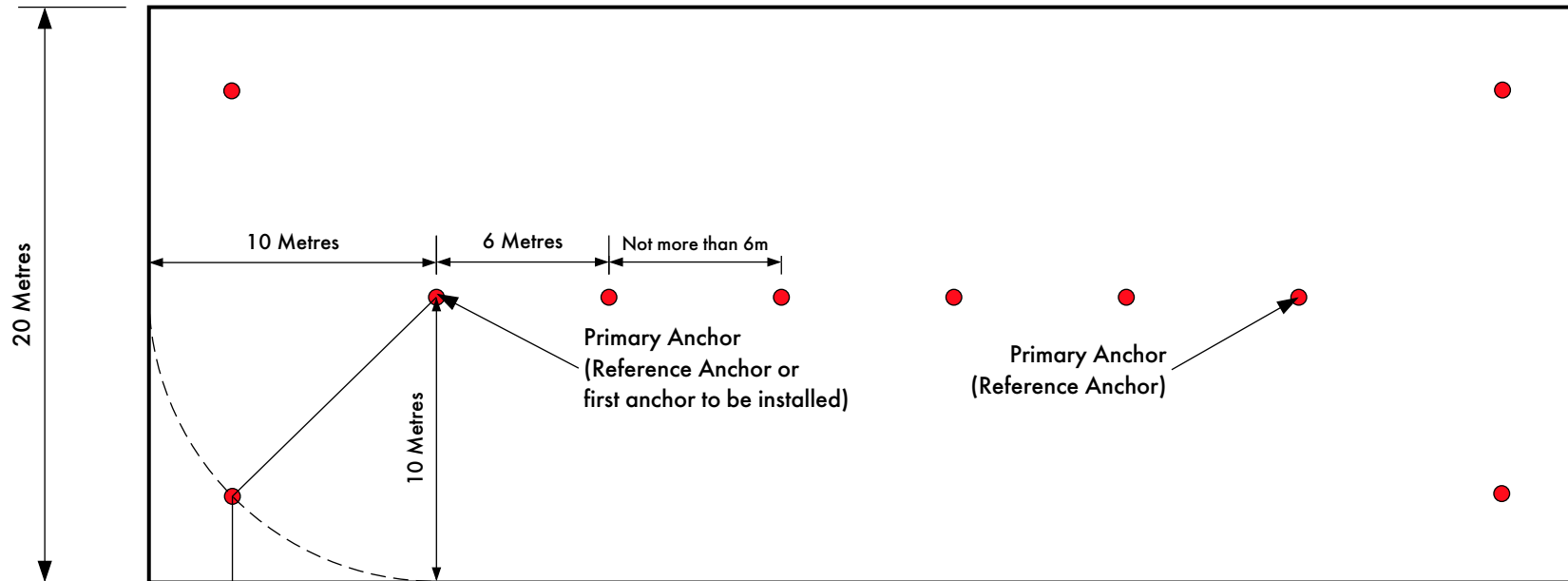
Anchor Positioning

Correct anchor positioning is critical to avoid pendulum effect.



Anchor Layout

Roofs up to 20m in width -
Anchors in centre of roof

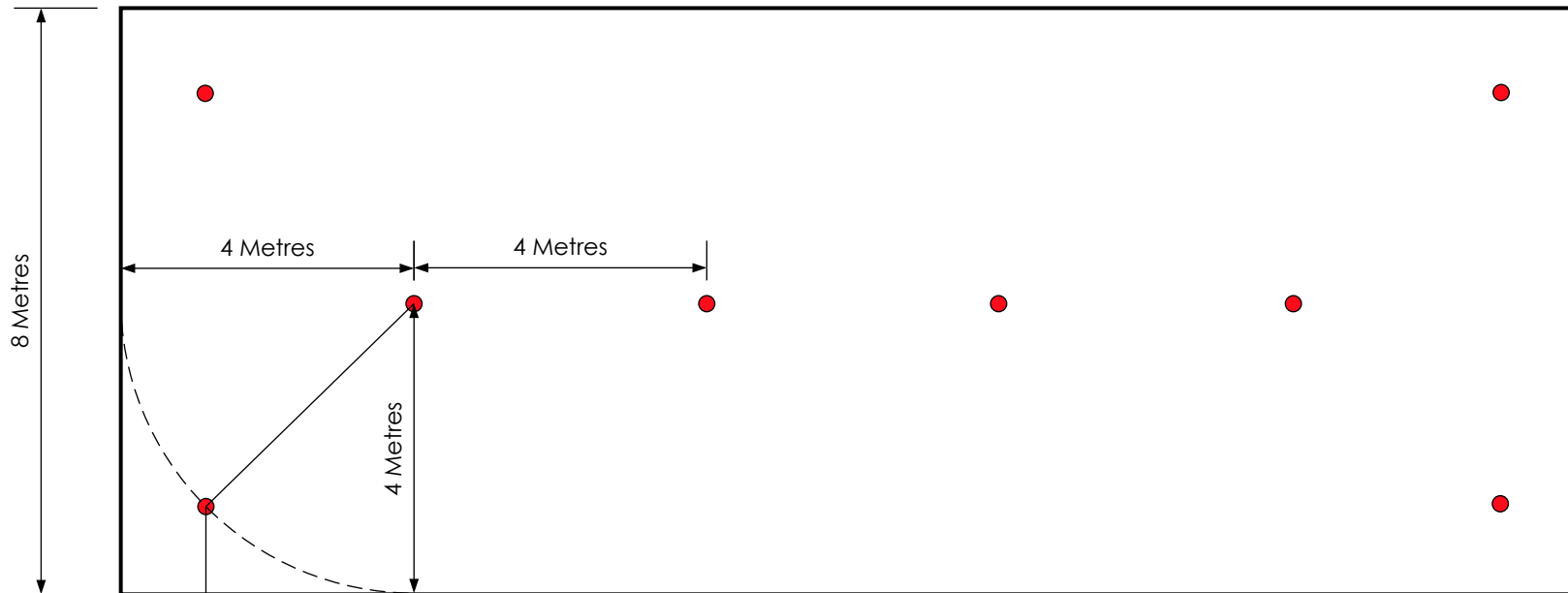


Notes:

- Never go more than 10m from the edge. Further than this will require special harness equipment.
- Never go more than 6m between anchors as this will create large 'dead zone' areas
- The Primary Anchor (or reference anchor) must always be placed such that the distance away from the sides are the same (positioning of purlins may restrict this slightly)
- When the anchor distance away from the fall edge exceeds 6m, the distance between the anchors MUST NOT exceed 6m - ie, if the spacing away from the fall edge is 8m, the first anchor will be 8m away from the edge but the consecutive anchors will be spaced at 6m apart.

Anchor Layout

Roofs under 20m in width

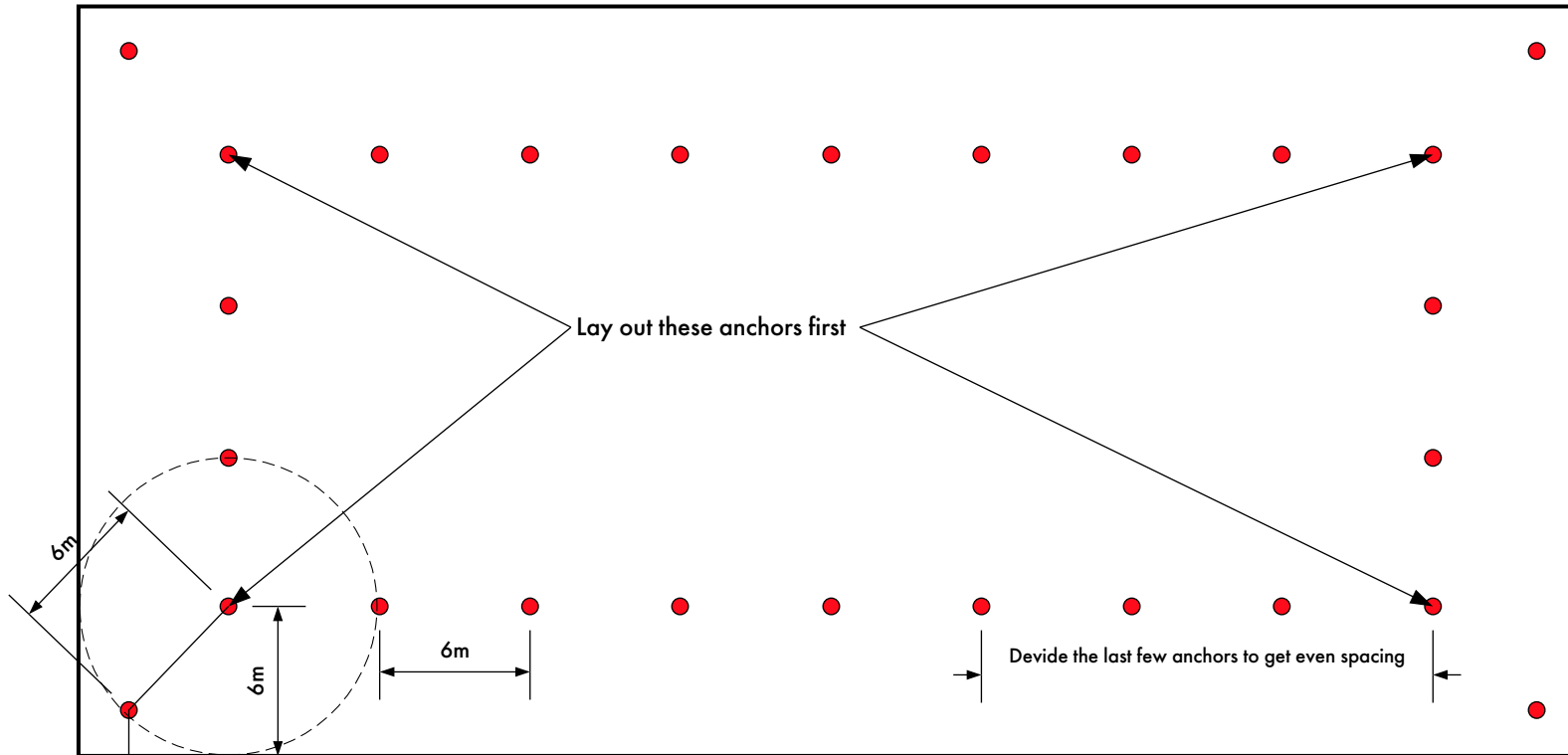


Notes:

- The spacing between the anchors is NEVER more than the distance away from the fall edge.
- When the anchor distance away from the fall edge exceeds 6m, the distance between the anchors MUST NOT exceed 6m - ie, if the spacing away from the fall edge is 8m, the first anchor will be 8m away from the edge but the consecutive anchors will be spaced at 6m apart.

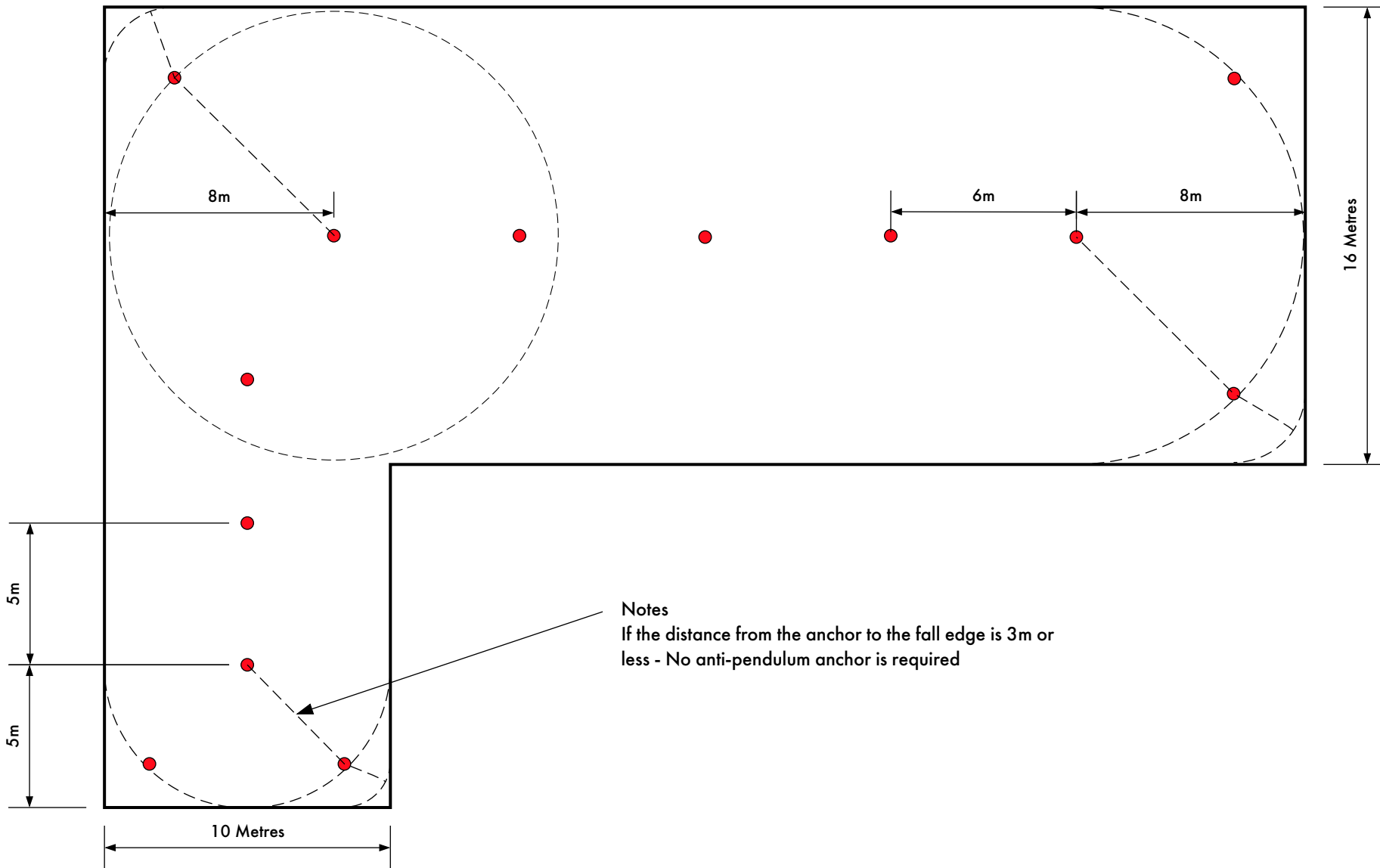
Anchor Layout

Roofs over 20m in width -
Anchors around perimeter of roof



Anchor Layout

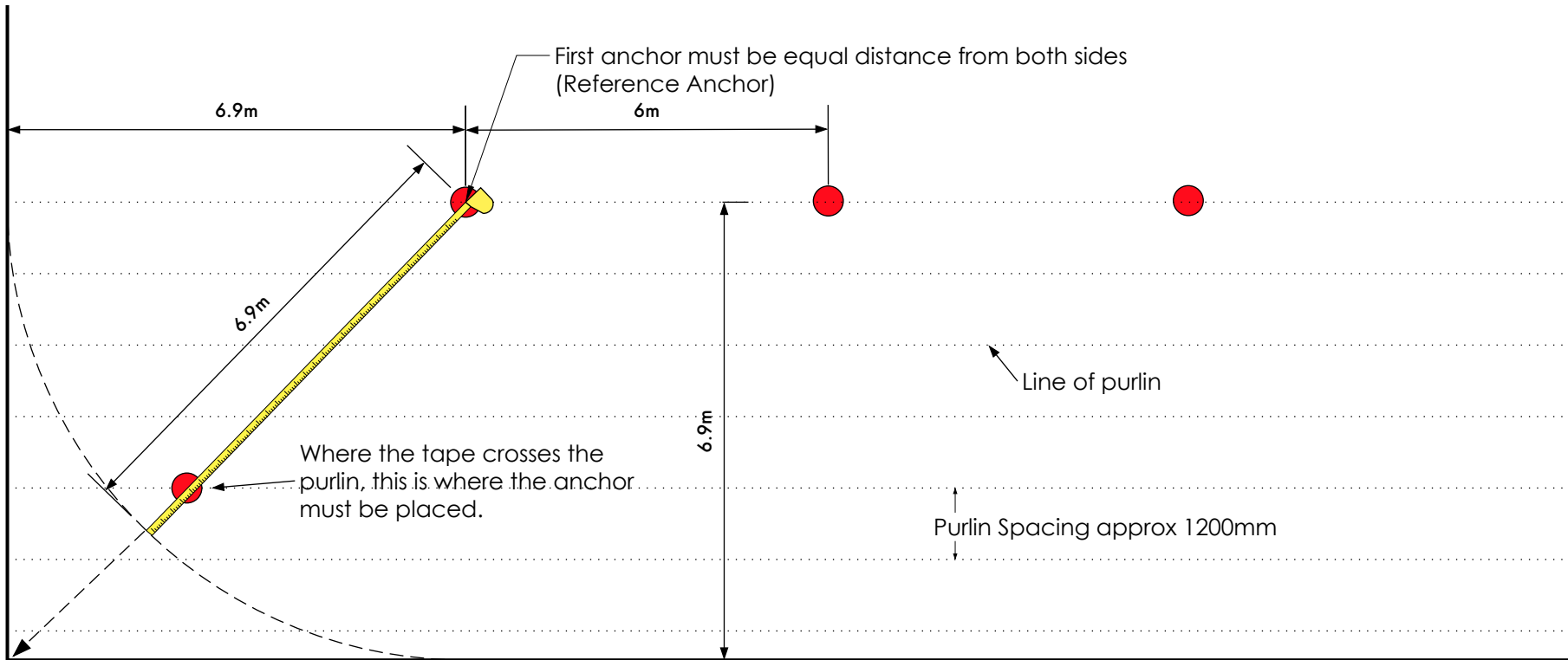
Different Combinations



Notes
 If the distance from the anchor to the fall edge is 3m or less - No anti-pendulum anchor is required

Anchor Layout

Placement of anchors in relation to purlins



Notes:

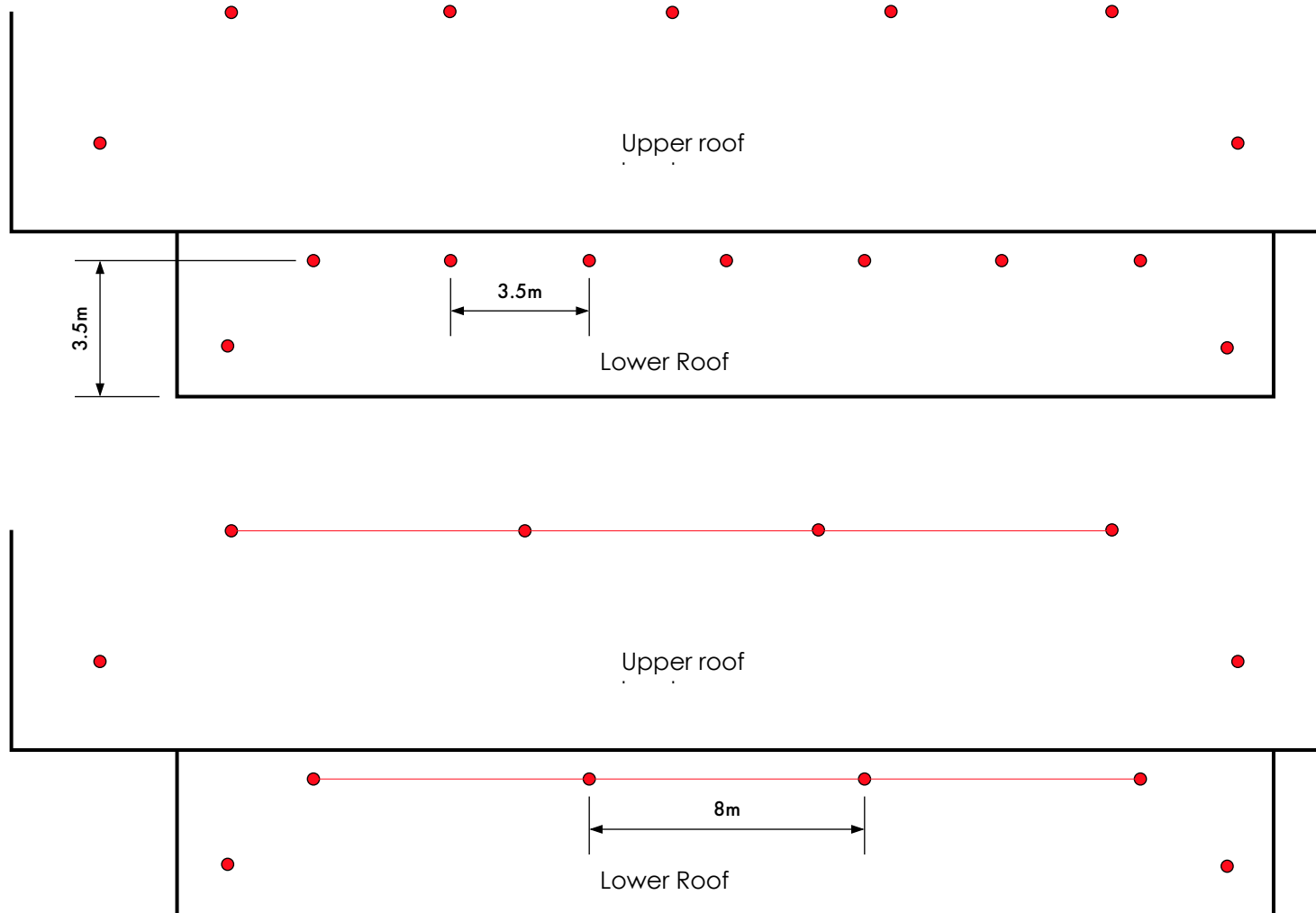
- Firstly asses where the purlins are situated
- measure from the roof edge to the purlin closest to 6m back (*if roof is more than 12m in width)
- Always take purlin that is spaced 6m or more from edge * - if purlin is less than 6m eg. 5.7m, then it would mean that all the consecutive anchors must be placed at 5.7m)

To Place Pendulum Anchor

- Take tape measure and measure from the first anchor (Reference Anchor) to the roof edge
- Then swing the tape around in an arc till it lines up with the corner of the roof
- Where the tape crosses the last purlin BEFORE the end of the tape, that is where the anchor is placed.
- If the distance from the anchor to the fall edge is 3m or less - No anti-pendulum anchor is required

Anchor - Static Line Layout

Anchors vs Static line layout



Note: Spacing of anchors/intermediates may also depend on working height.

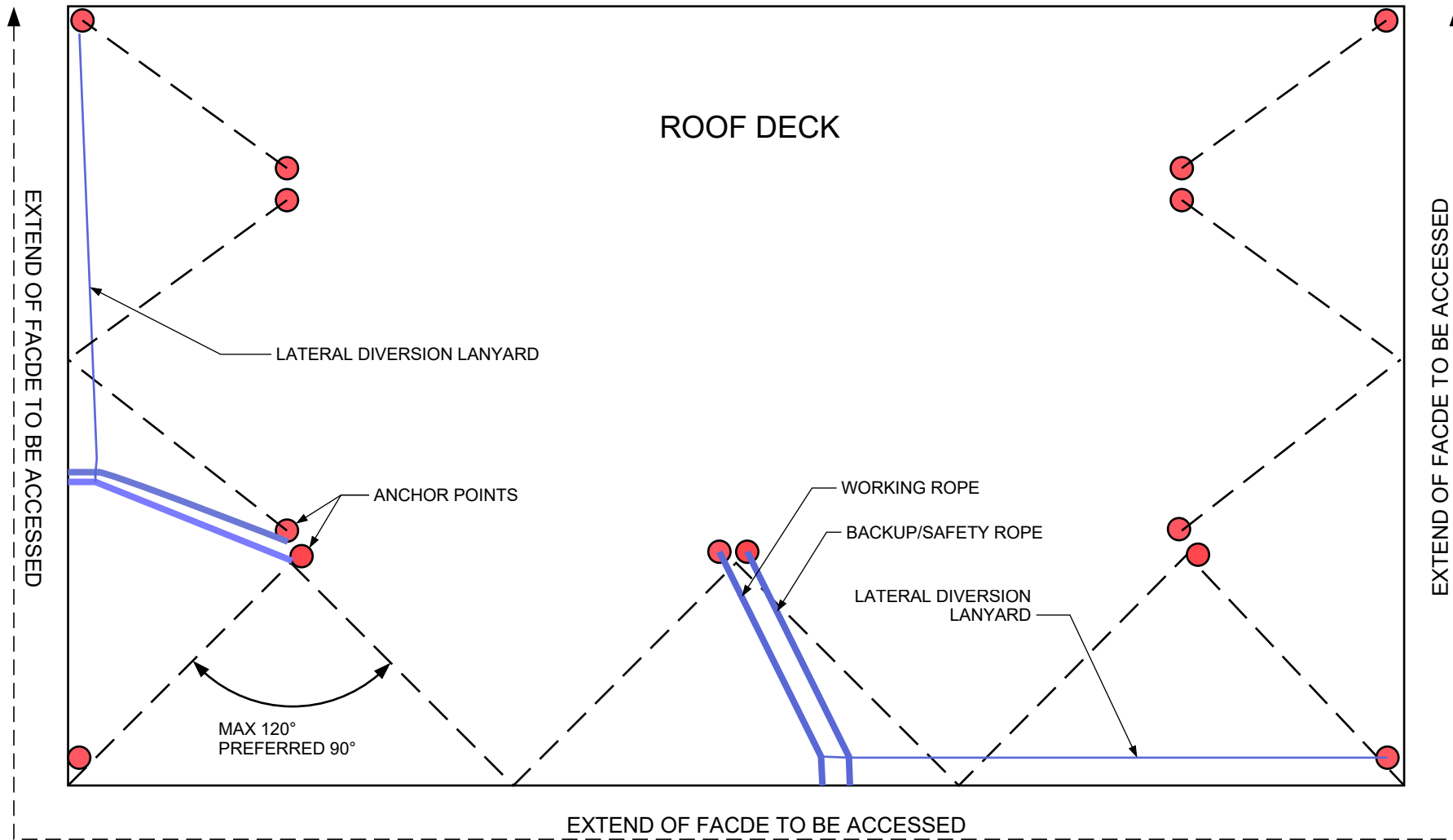
Abseil/Twin Rope Anchor Layout

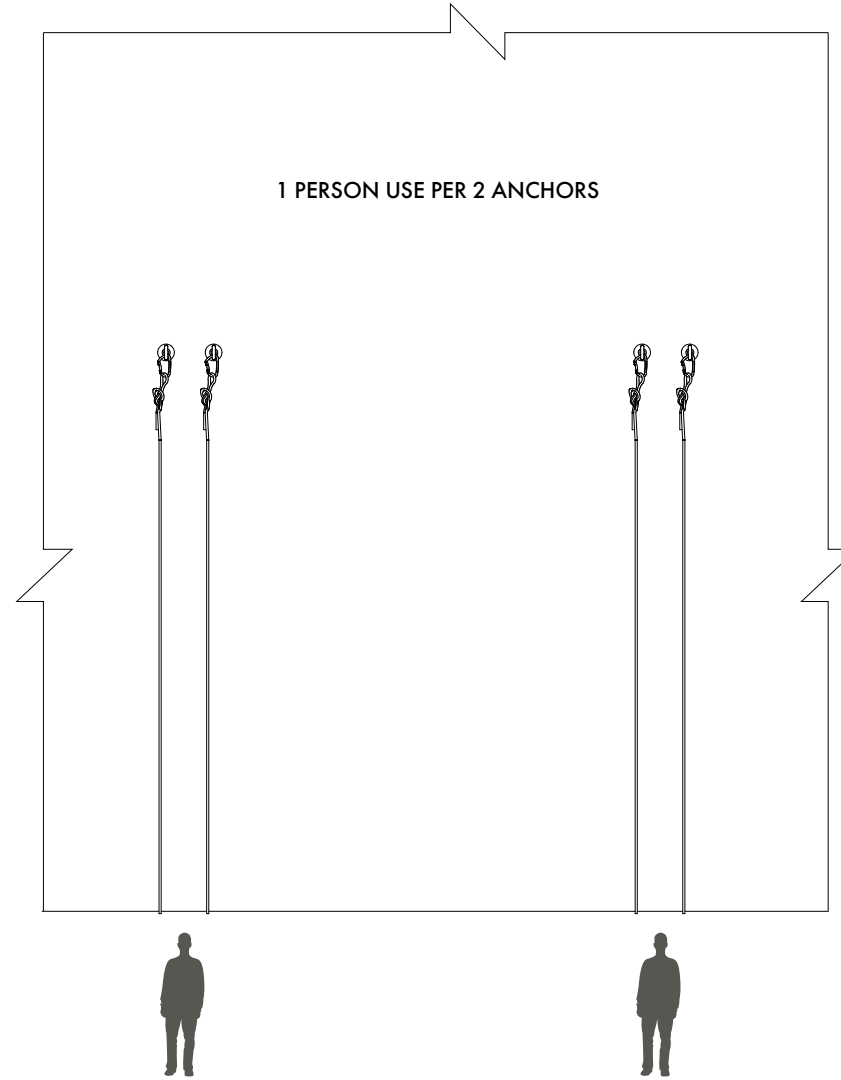
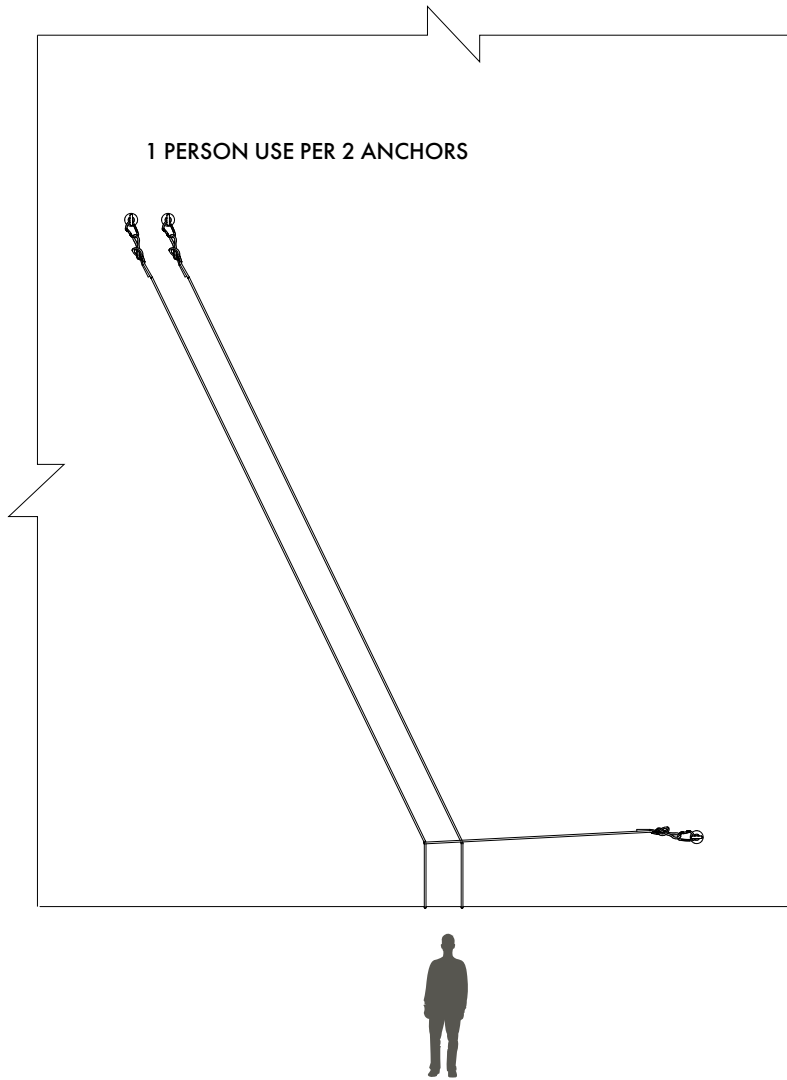
Option 1

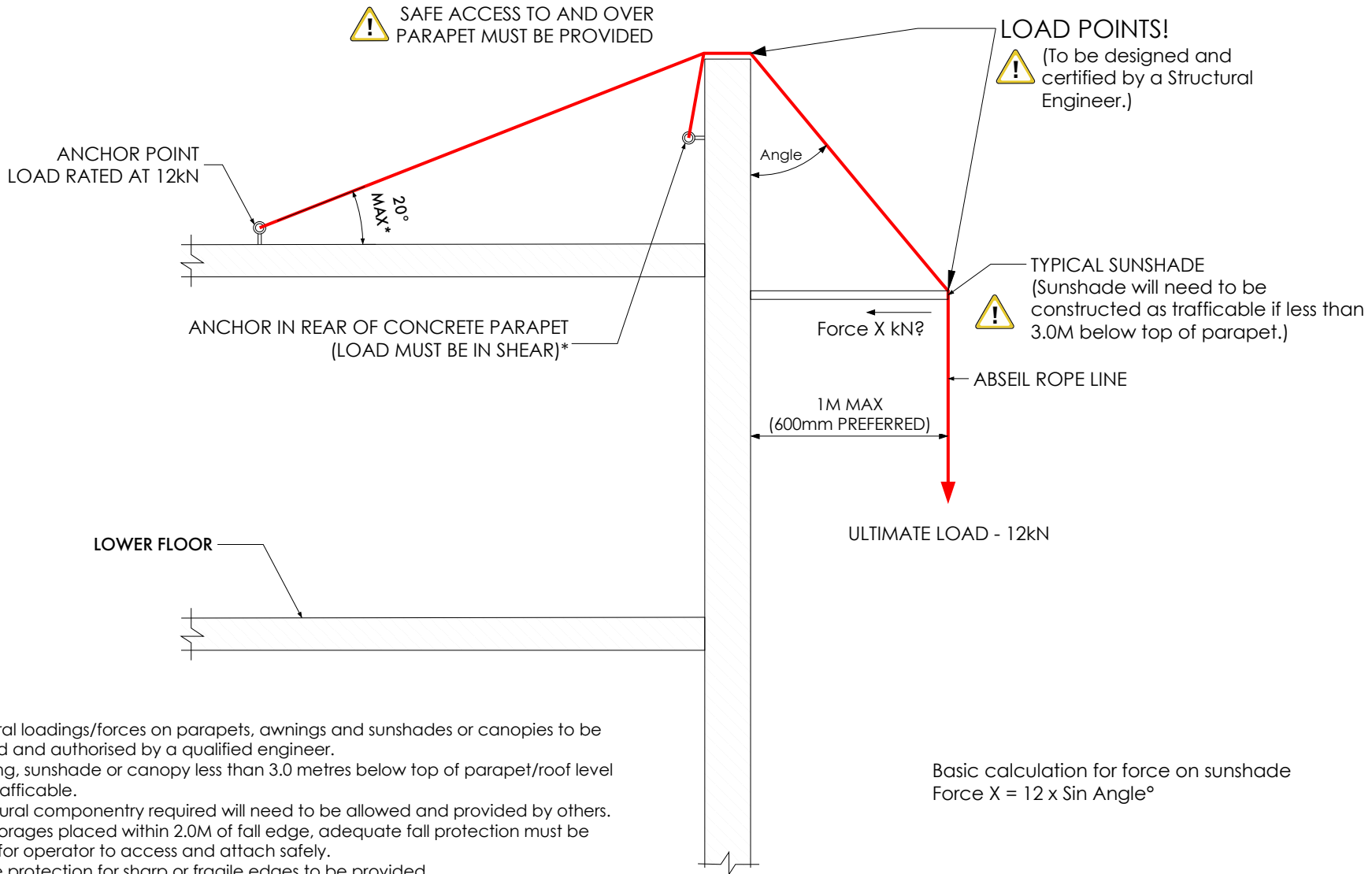


Abseil/Twin Rope Anchor Layout

Option 2

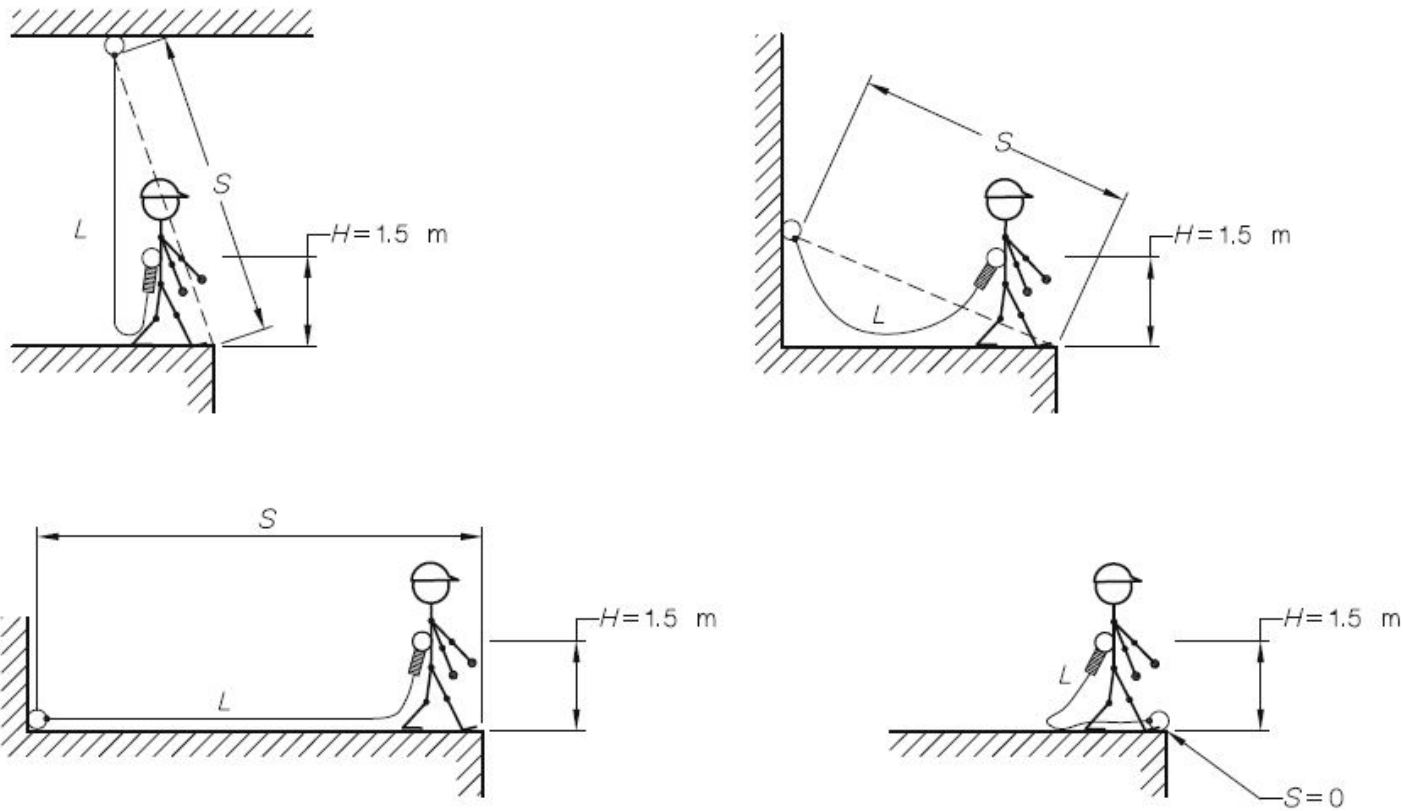






- All structural loadings/forces on parapets, awnings and sunshades or canopies to be calculated and authorised by a qualified engineer.
- Any awning, sunshade or canopy less than 3.0 metres below top of parapet/roof level must be trafficable.
- Any structural componentry required will need to be allowed and provided by others.
- Any anchorages placed within 2.0M of fall edge, adequate fall protection must be provided for operator to access and attach safely.
- Adequate protection for sharp or fragile edges to be provided.
- Layout of fall protection and abseil devices is critical.
- All products/systems to comply with relevant Australian Standards; OH & S Regulations and Codes of Practice.
- Any davit arm system that requires a base mount configuration will need an Engineered Design.
- Any anchor that is friction fit or glued in, must be installed so that the load applied is not more than 20 deg (Creating a tension load) - AS/NZS 1891

MEASUREMENT OF FREE FALL DISTANCE - Extract from AS/NZS 1891.4:2009 8.2



$$\text{FREE FALL DISTANCE} = L - S + H$$

NOTE: Some configurations may result in a potential free-fall distance in excess of 2.0 m (see Clause 8.3).

FIGURE 8.1 MEASUREMENT OF FREE-FALL DISTANCE—FIXED LENGTH LANYARD

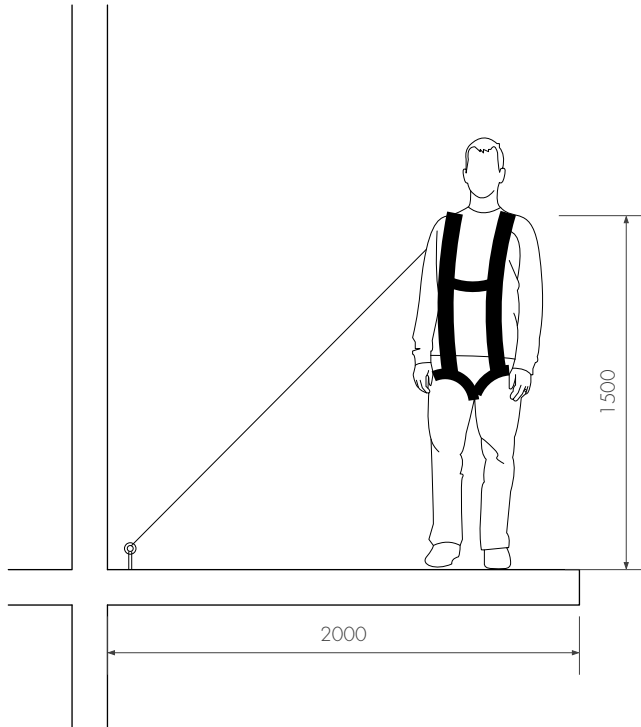


Fig 1.

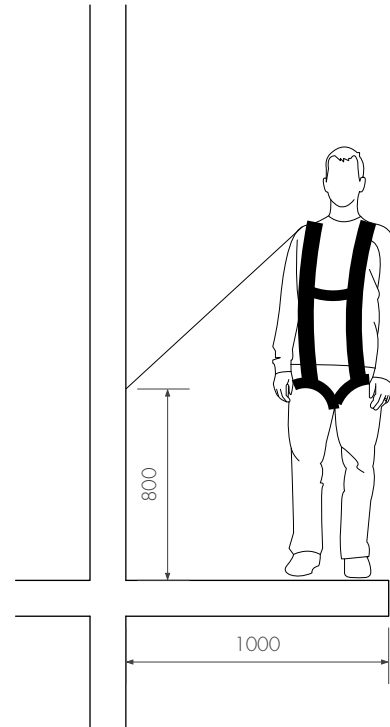


Fig 2.

HEIGHT WIDTH	1000	800	600	400	200	On Floor
600		Exceed Fall Allowance	Exceed Fall Allowance	Exceed Fall Allowance	Exceed Fall Allowance	Exceed Fall Allowance
800			Exceed Fall Allowance	Exceed Fall Allowance	Exceed Fall Allowance	Exceed Fall Allowance
1000				Exceed Fall Allowance	Exceed Fall Allowance	Exceed Fall Allowance
1200					Exceed Fall Allowance	Exceed Fall Allowance
1400						Exceed Fall Allowance
1600						Exceed Fall Allowance
1800						
2000						

Fig 2.

Fig 1.

NOTE:

This is to be used as a guide only. Calculations must be based on site conditions and Australian Standards/Code of Practice Regulations.