Kattsafe Height access and fall protection

FALL ARREST & ABSEIL LAYOUT DESIGN MANUAL



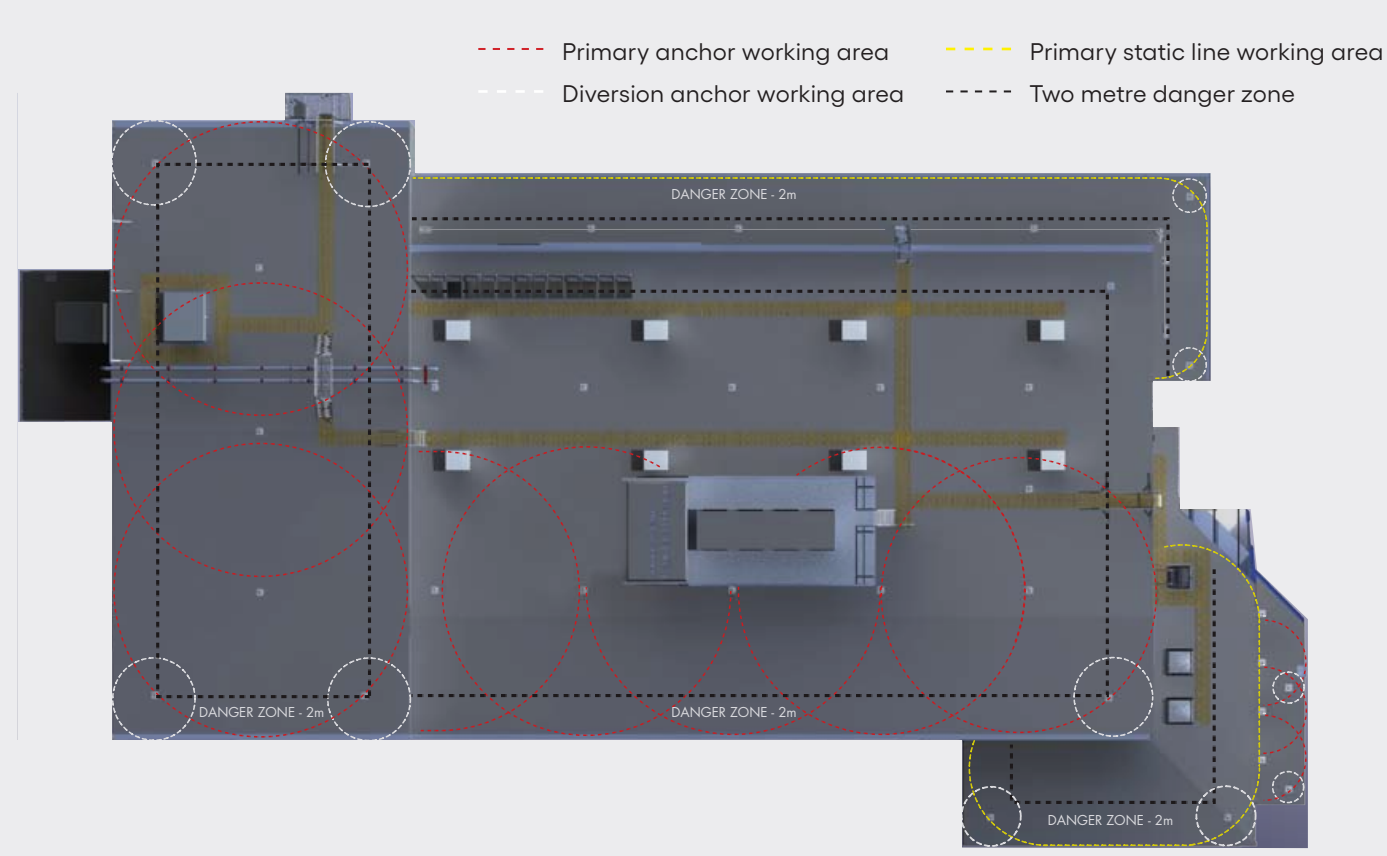
LAYOUT CRITERIA & IMPORTANT INFORMATION

What mandatory WHS 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.



AUSTRALIAN STANDARDS SUMMARY

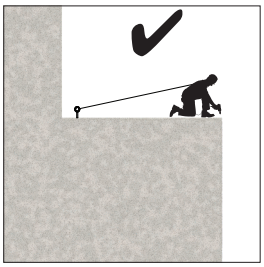


Figure 1

CORRECT Anchor loading in shear.

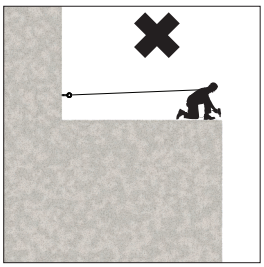


Figure 2

INCORRECT Anchor loading in tension. (Through bolt or cast-in anchors acceptable.)

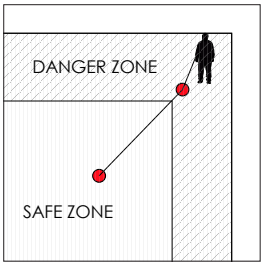


Figure 3

Primary anchor required in ‘safe zone’. Diversion anchor may be in ‘danger zone’.

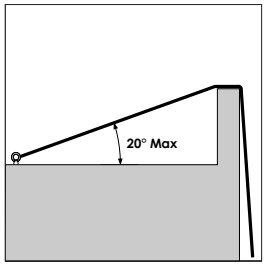


Figure 4

Lanyard not to exceed 20°. This will cause excessive tensile load on the anchor.

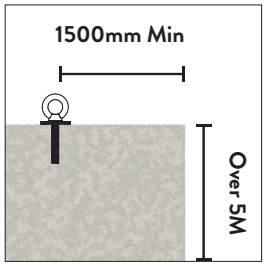


Figure 5

Anchor positioning for fall arrest minimum 1500mm from edge if vertical height is over 5000mm.

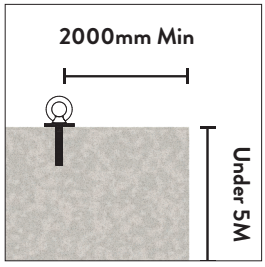


Figure 6

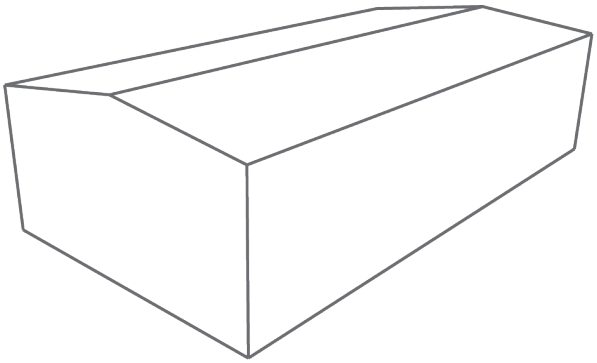
Anchor positioning fall arrest minimum 2000mm from edge if vertical height is under 5000mm.

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ANGLE OF ROOF SLOPE

1° - 15° Roof slope

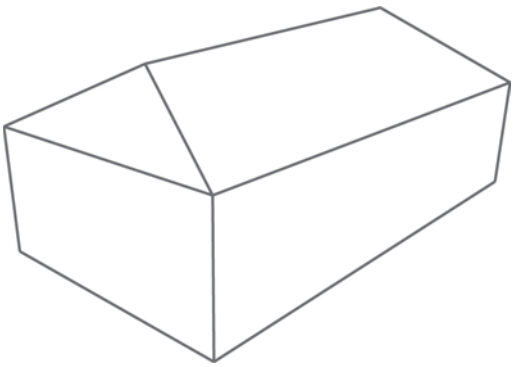
No fall protection required when further than 2000mm from fall edge.





16° - 40° Roof slope

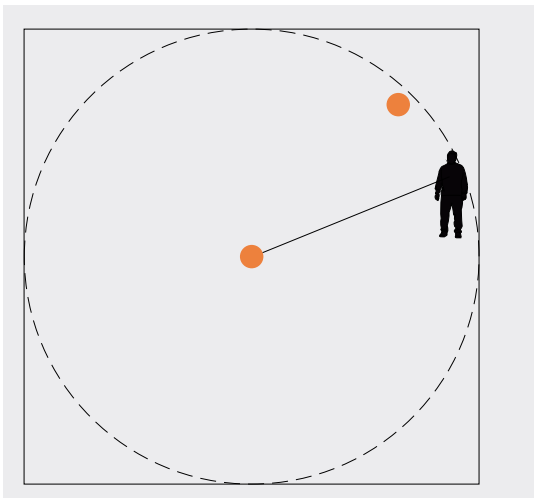
Fall protection/attachment is required at all times.
Anything over 40° must be abseil/twin rope.



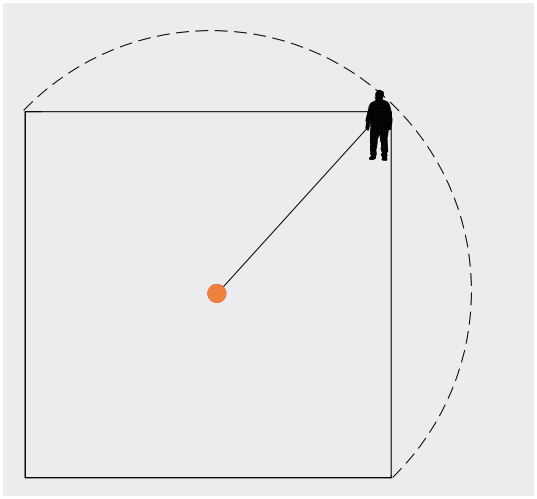


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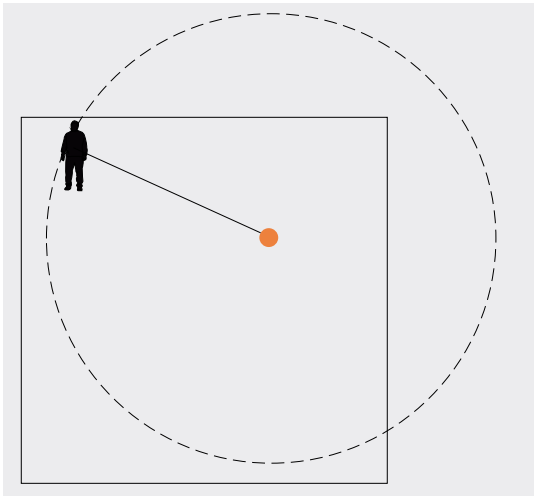
ANCHOR POSITIONING



Correct anchor positioning and ropeline length



Incorrect anchor layout (No anti-pendulum anchor)

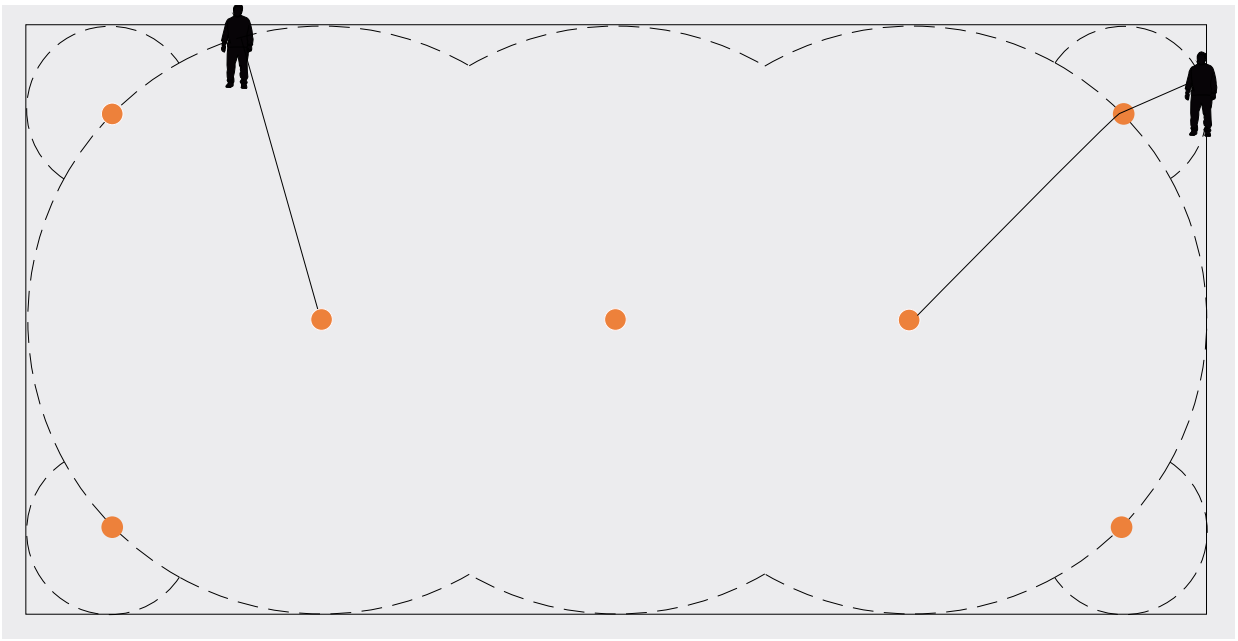


Incorrect anchor layout (Wrong positioning)

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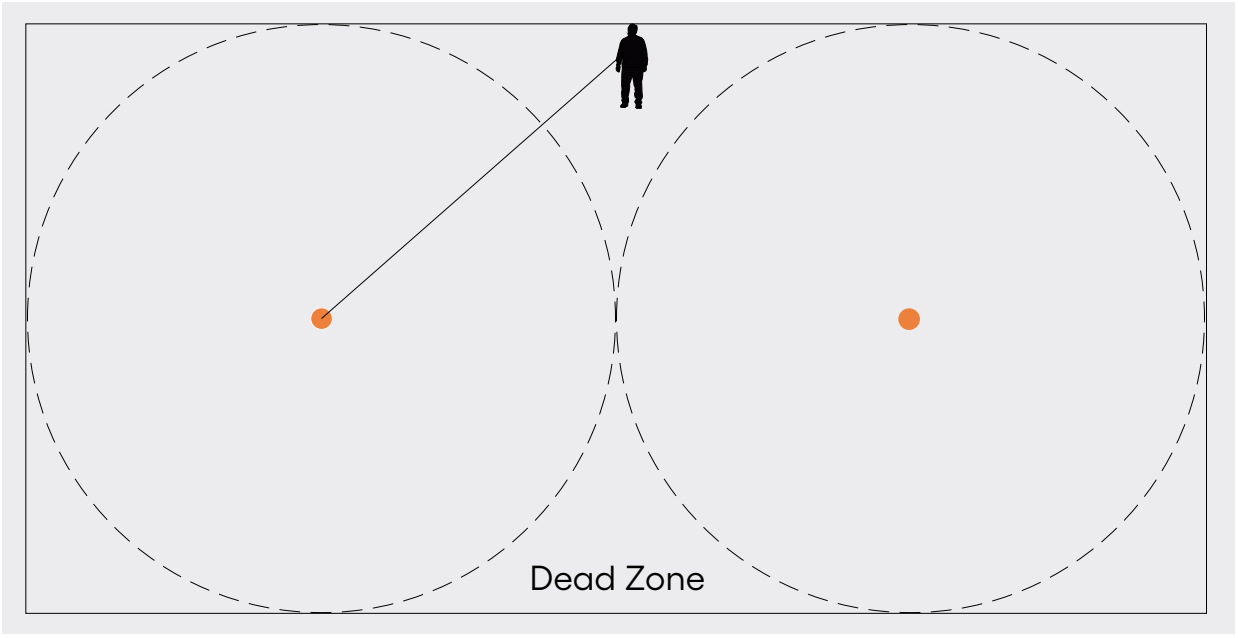
Correct

Correct anchor positioning with sufficient roof coverage.



Incorrect

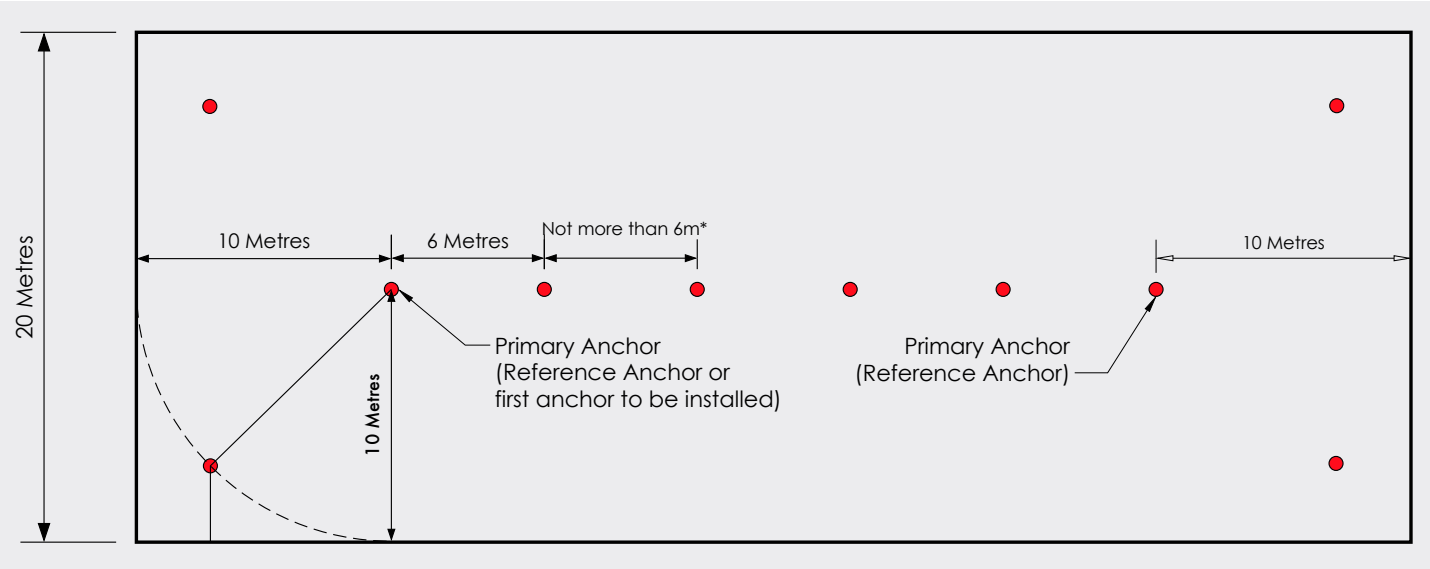
Incorrect anchor positioning with large dead zones exposing the user to pendulum fall when extending ropeline.



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ANCHOR LAYOUT

Roofs from 12 - 20m in width



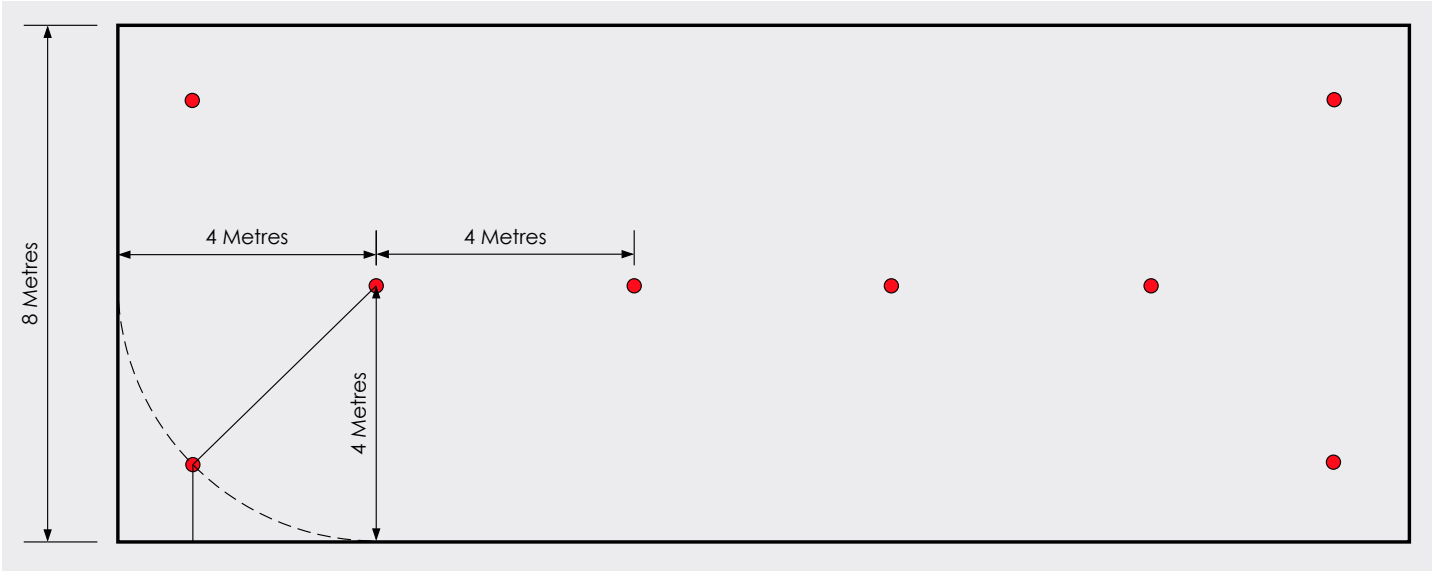
- Never go more than 10m from the edge. Further than this will require special harness equipment.
- Never go more than 6m between anchors as this will create large 'dead zone' areas
- The primary anchor (or reference anchor) must always be placed such that the distance away from the sides are the same (positioning of purlins my 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.

Note

Anchor spacings/positions may need to increase to avoid skylights and other issues. 1/2m is the recommended maximum variation as it will increase pendulum risk.

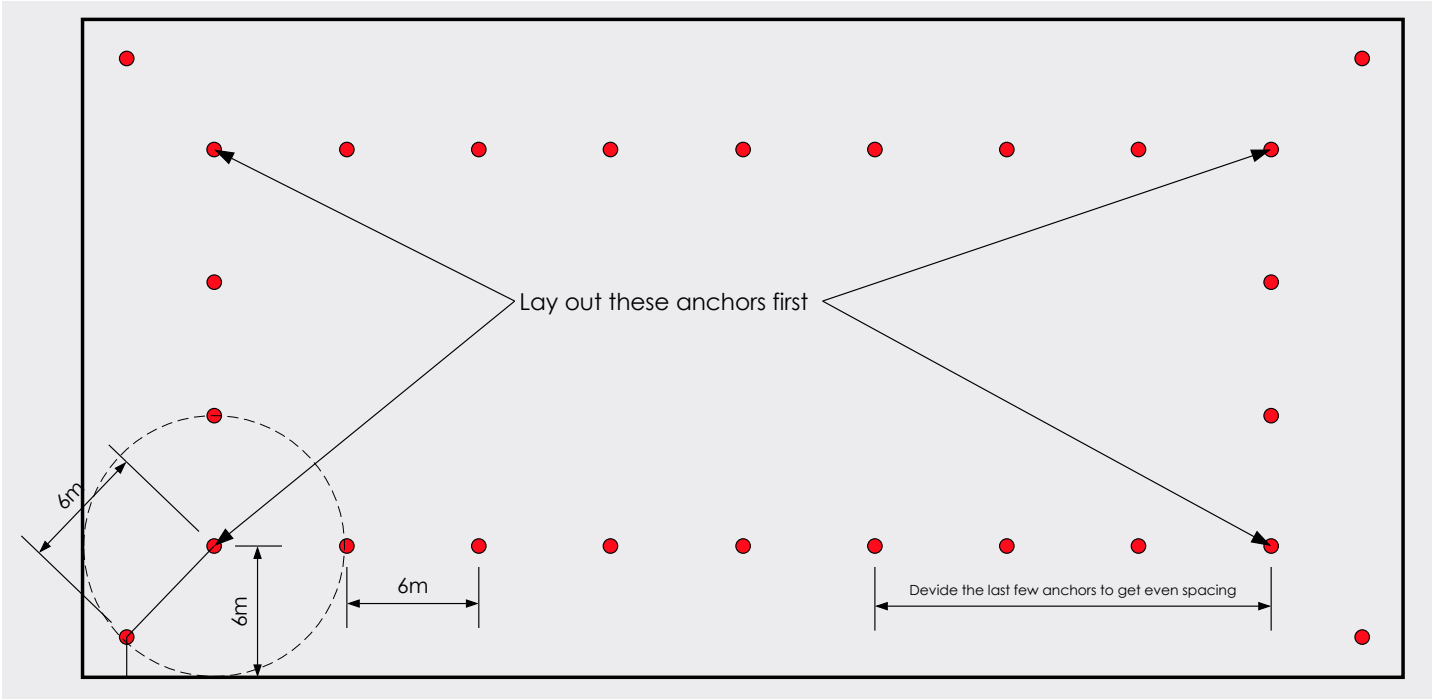
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Roofs under 12m in width



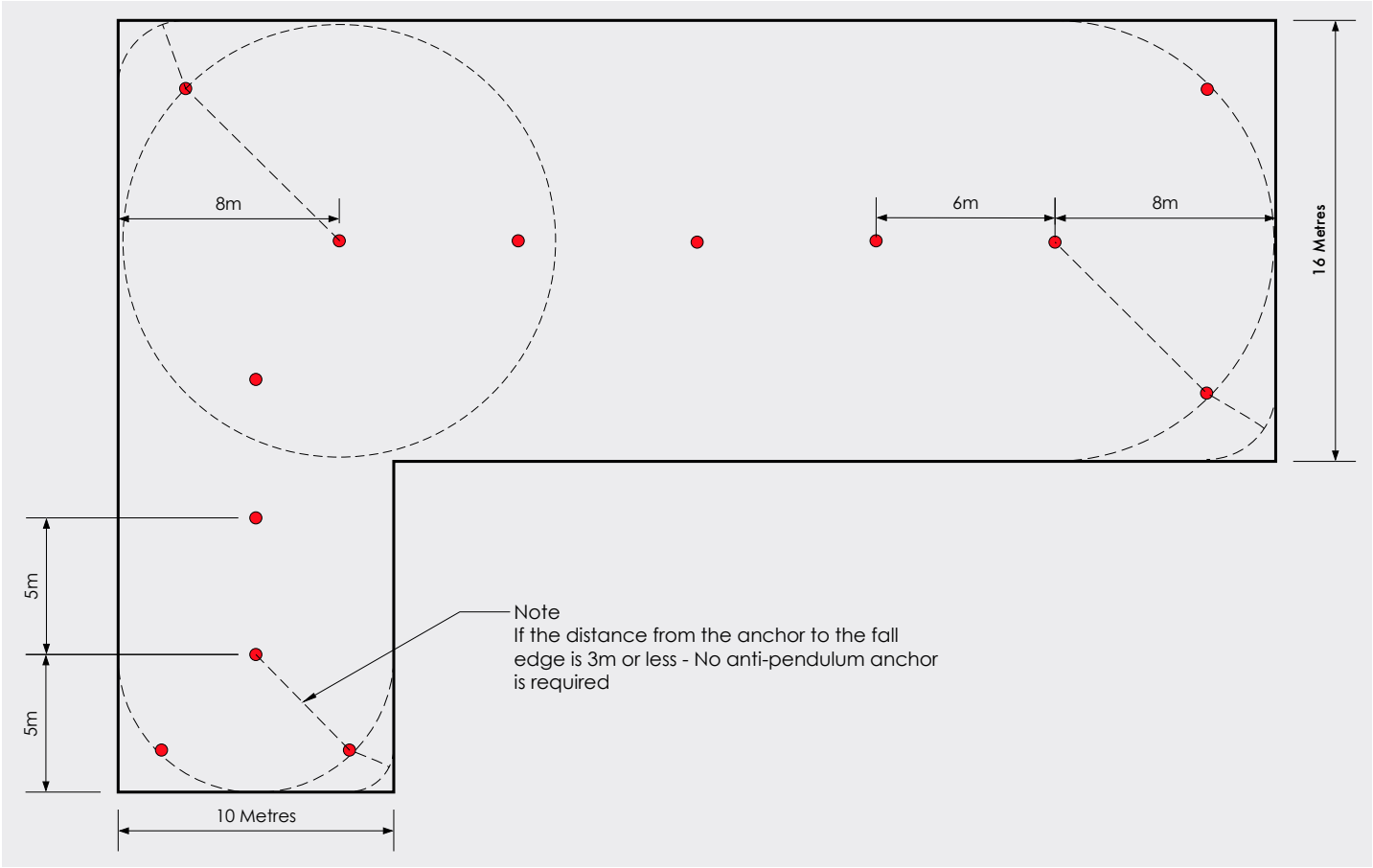
- The spacing between the anchors is NEVER more than the distance away from the fall edge.
- When the anchor distance away from the fall edge is less than 6m, the distance between the anchors must be the same distance that the primary anchor is from the edge or less.

Roofs over 20m in width



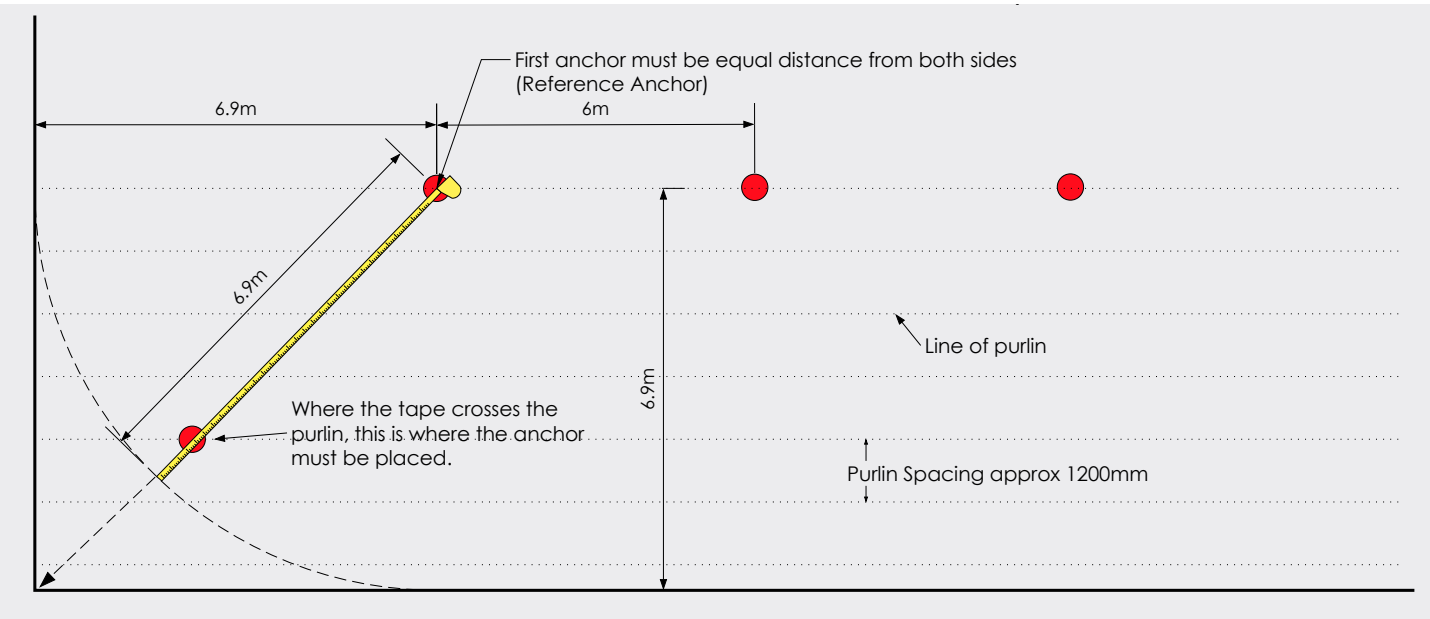
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Different combinations



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Placement of anchor in relation to purlins



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

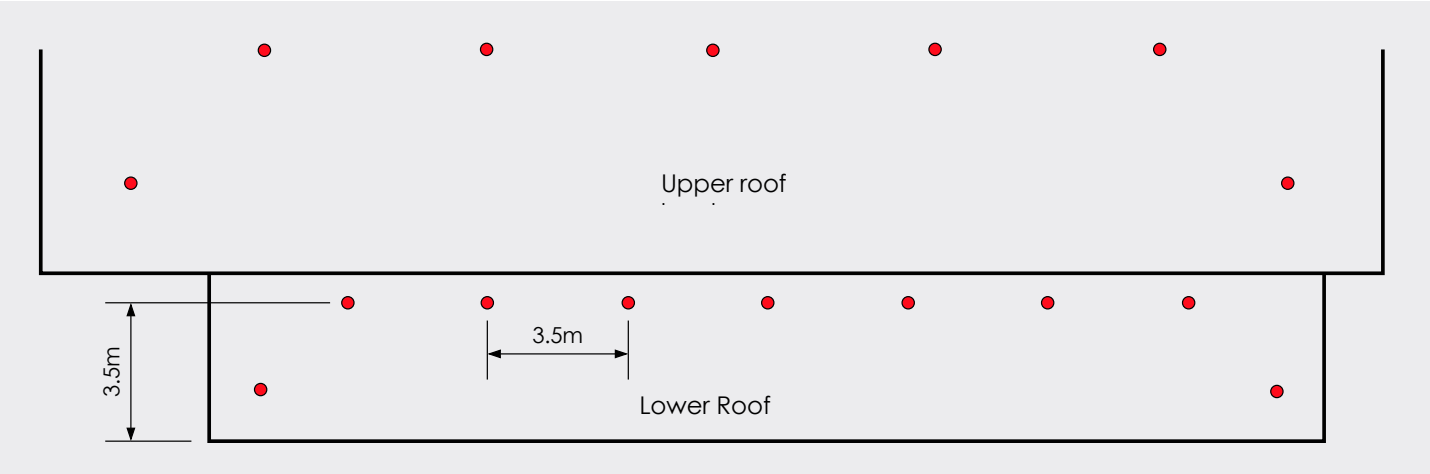
To place the pendulum anchor

- 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.

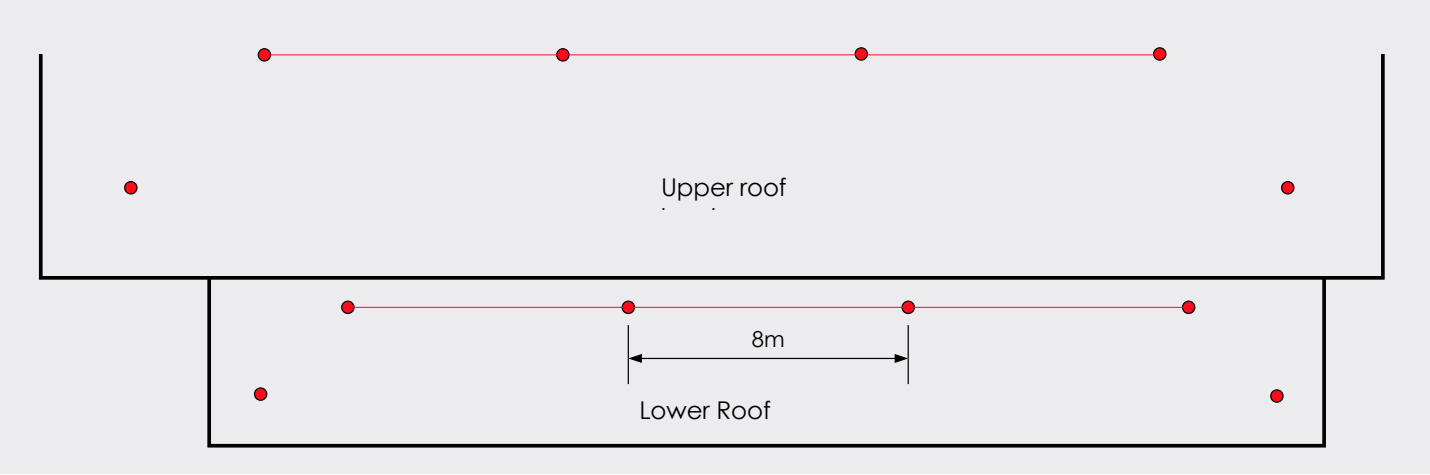
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STATIC LINE LAYOUT

Anchor layout



Static line layout



Spacing of anchors/intermediate may also depend on working height to reduce deflection

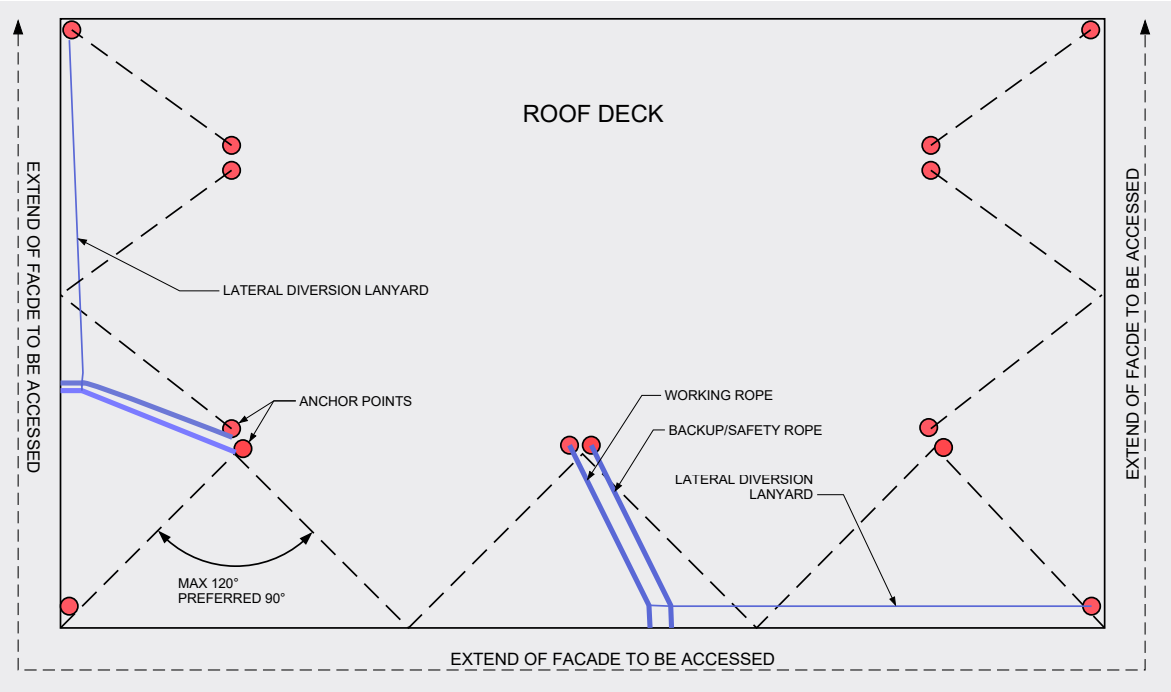
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ABSEIL/TWIN ROPE ANCHOR LAYOUT

Option one

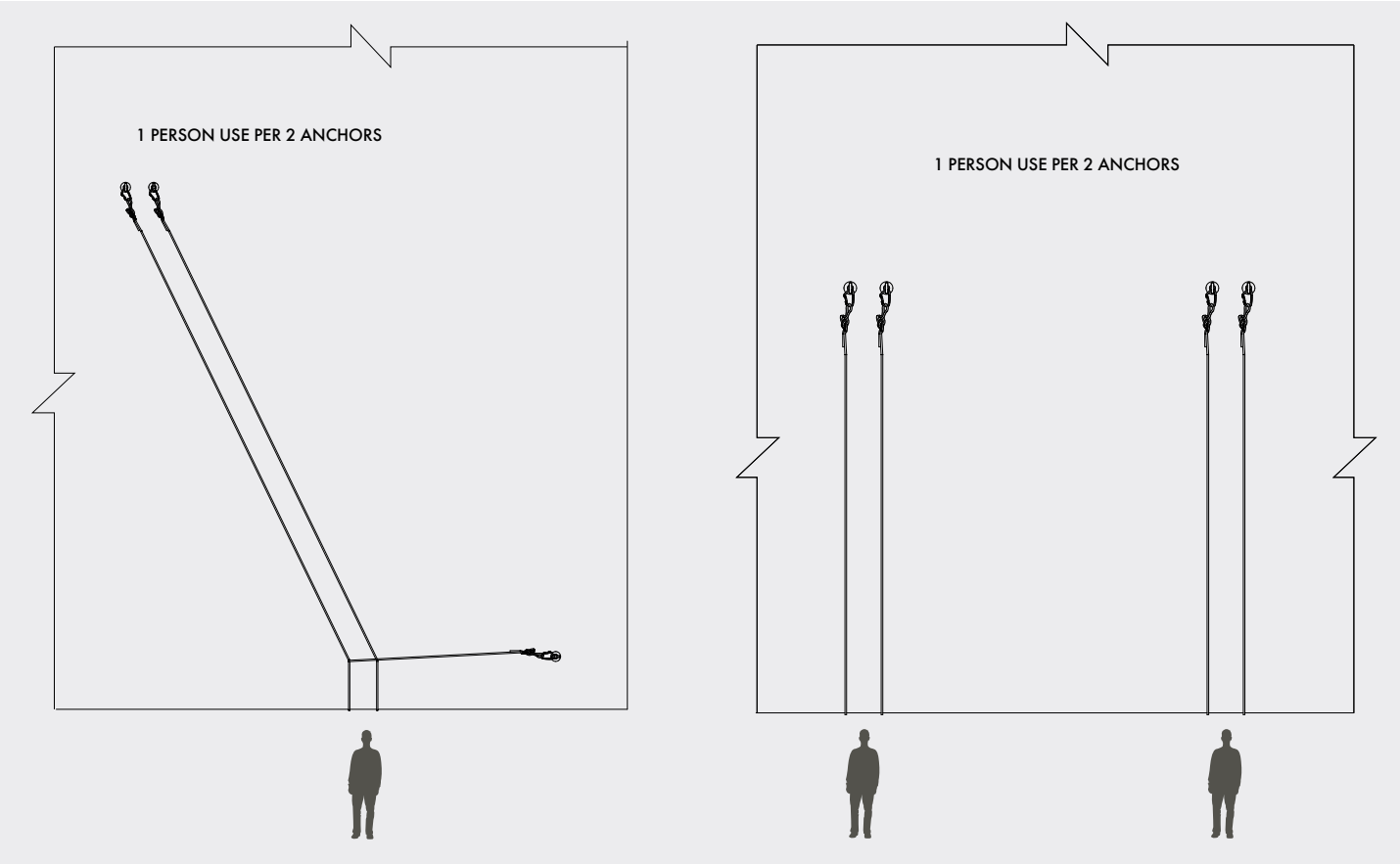


Option two



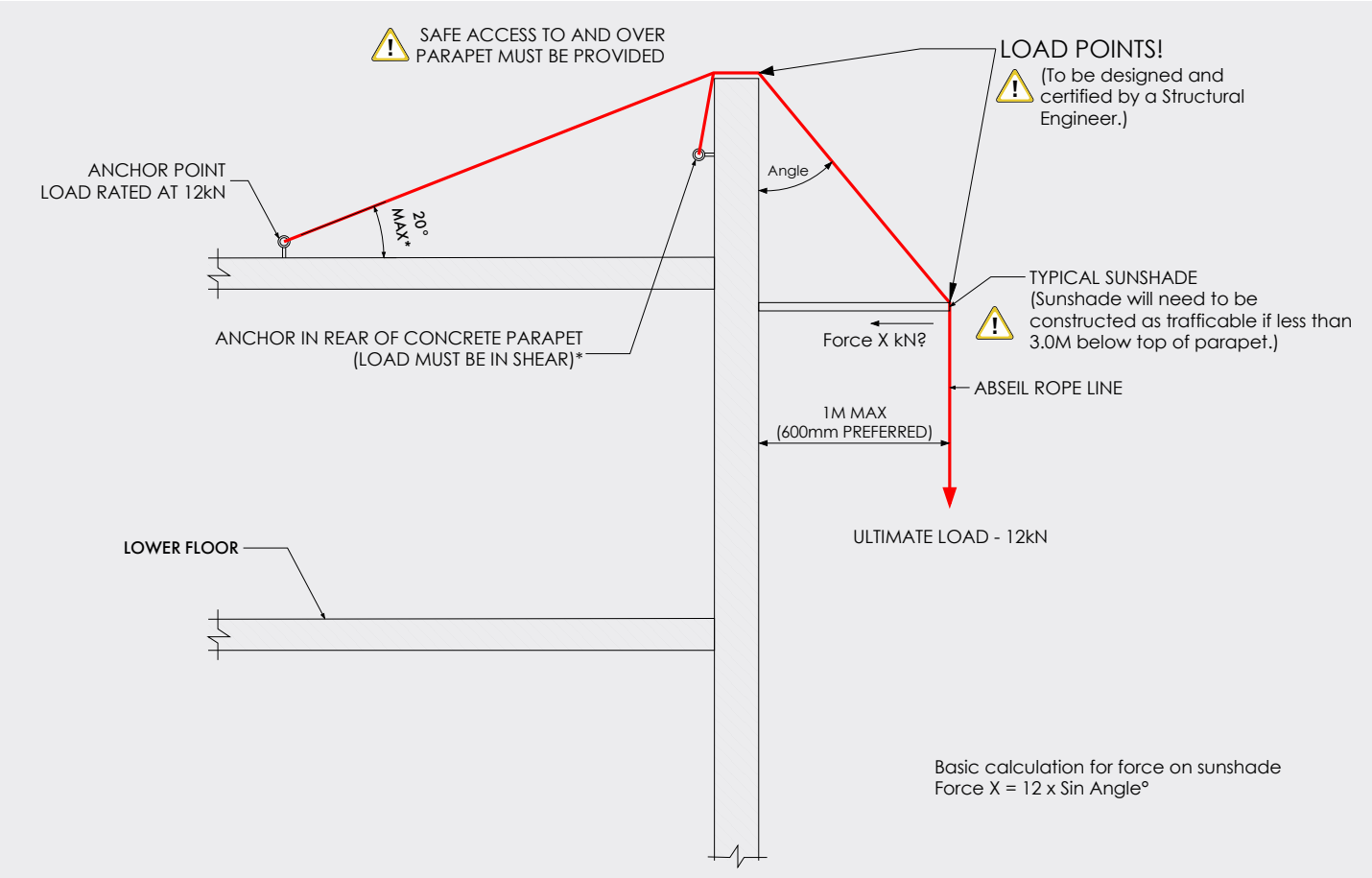
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Anchor usage



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Loads



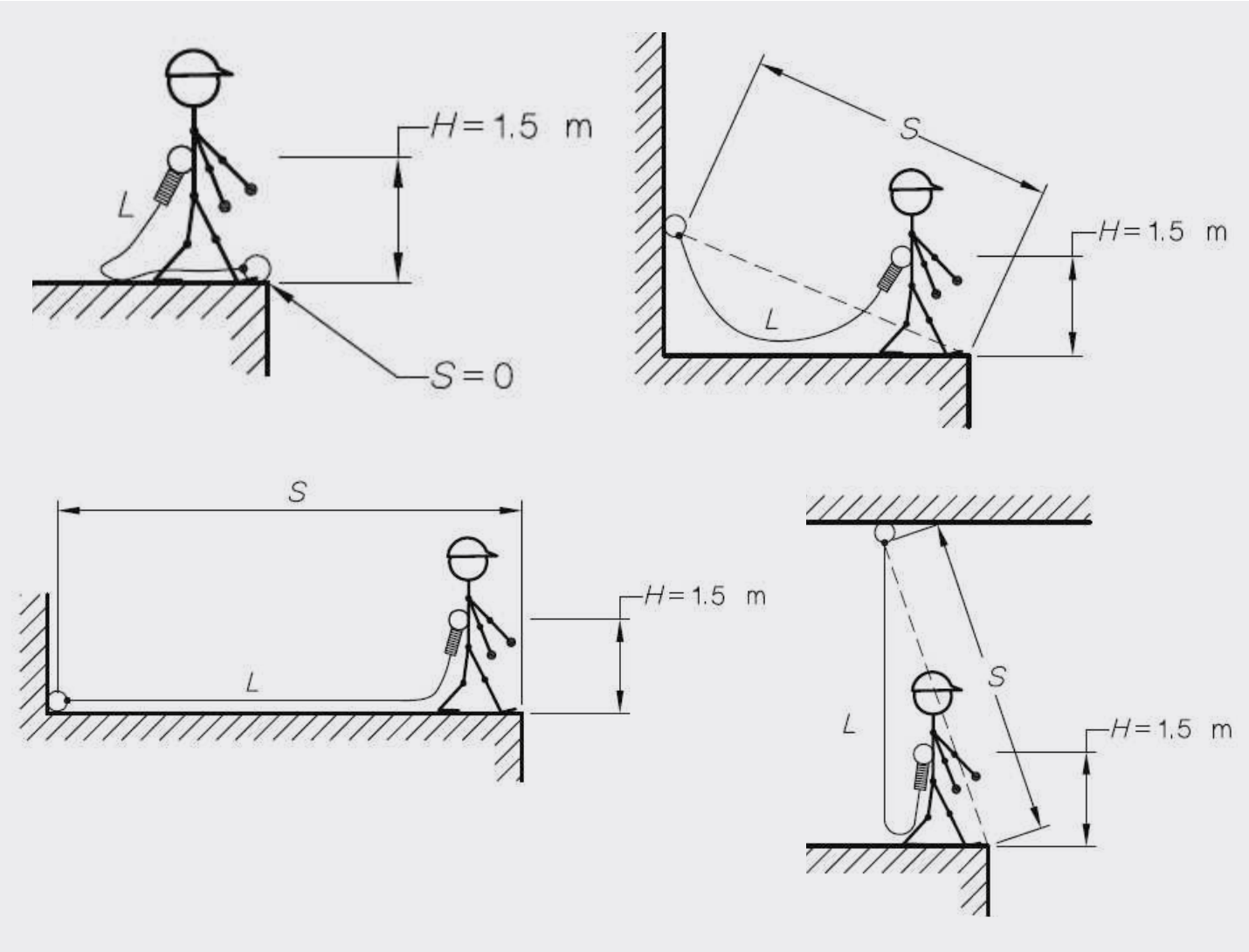
- All structural loadings/forces on parapets, awnings and sunshades or canopies to be calculated and authorised by a qualified engineer.
- Any awning, sunshade or canopy less than 3.0m below top of parapet/roof level must be trafficable.
- Any structural components required will need to be allowed and 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; OHS 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.

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FALL ARREST POSITIONING

Measurement of free fall distance

Free fall distance = length of lanyard (L) - straight distance (S) + height (H) to 'D' ring (1.5m).



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Fall distance calculation

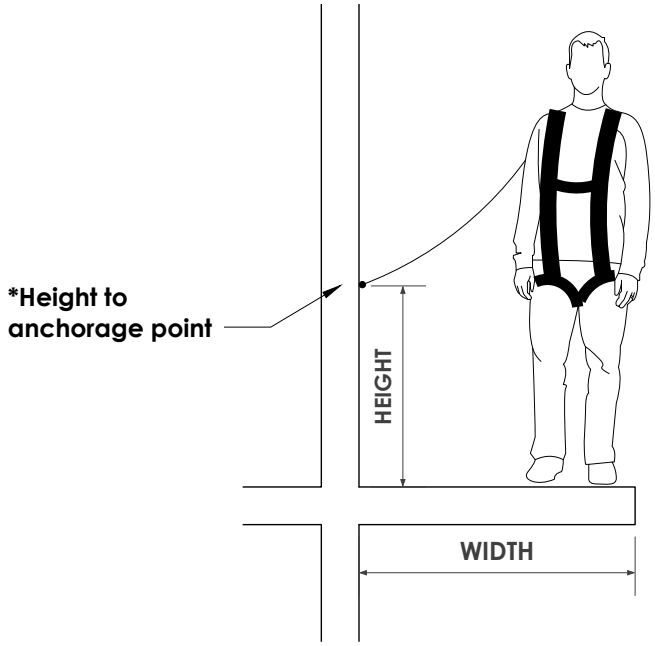


Fig 1.

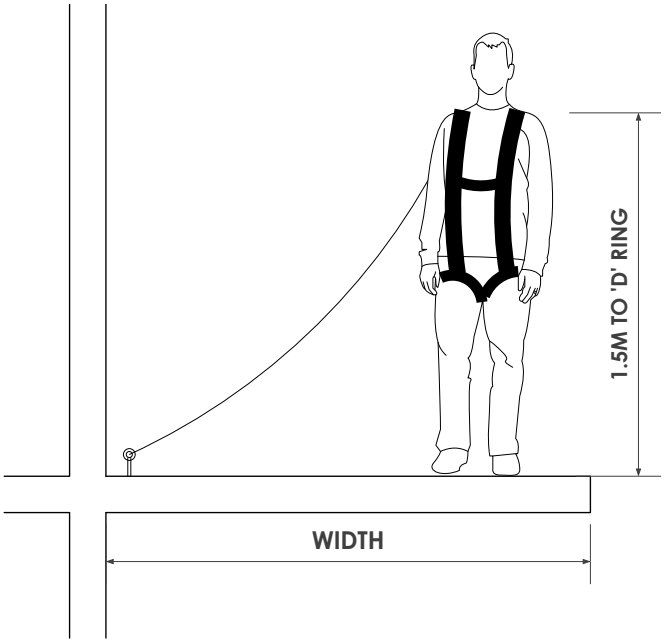


Fig 2.

	Width (mm)	Height 1000mm+ (Fig 1)	Height 600mm (Fig 1)	Height On floor (Fig 2)
Fig 1.	600	Suitable	Exceeds fall allowance	Exceeds fall allowance
	1000	Suitable	Suitable	Exceeds fall allowance
	1500	Suitable	Suitable	Exceeds fall allowance
Fig 2.	1500	Suitable	Suitable	If 1.5m lanyard is used
	2000	Suitable	Suitable	Suitable

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Website
kattsafe.com.au

QMS Certification
ISO 9001:2015

Find all related products and resources on our website.
kattsafe.com.au

Kattsafe

Height access
and fall protection

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