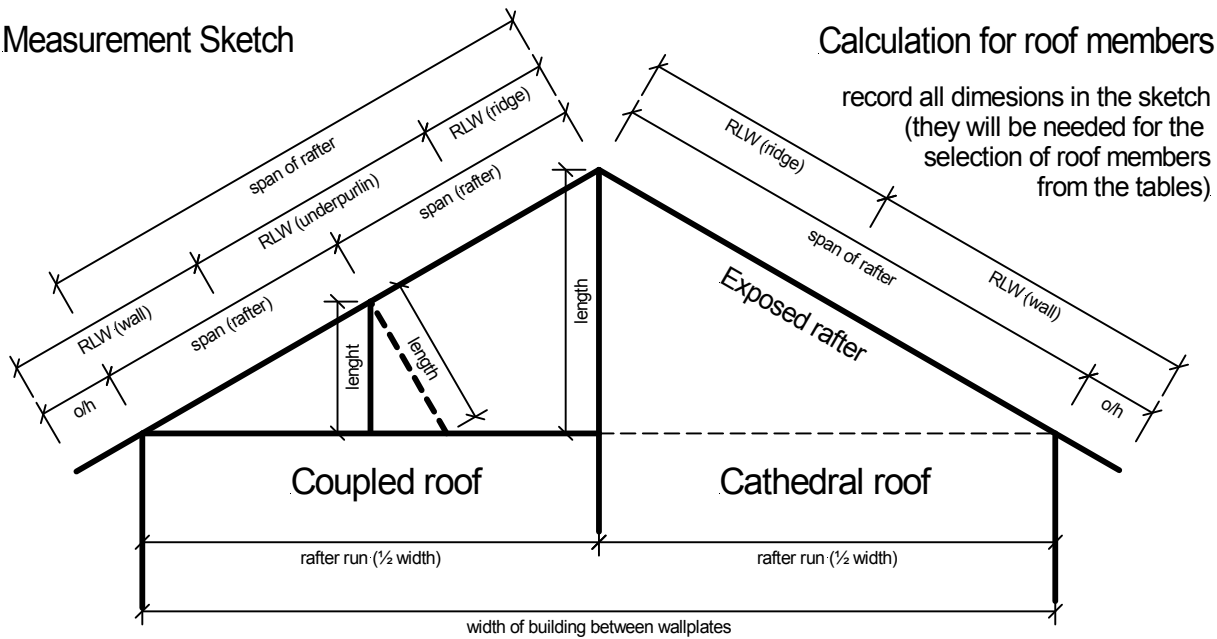## Measurement Sketch

Calculation for roof members
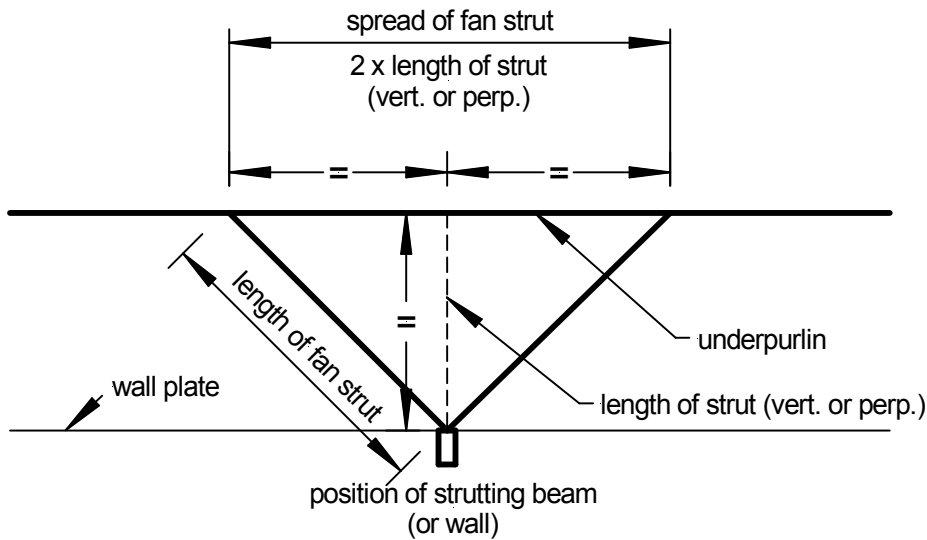
record all dimesions in the sketch
(they will be needed for the
selection of roof members
from the tables)

Rafter run = external width between the wall plates divided by two.
Rafter span = rafter run divided by cos°.
Overhang = eaves width divided by cos° (add dimensions for brick veneer).
Ridge strut = rafter run x tan°.
Decide whether an underpurlin is needed; if it is place it at mid-span.
New rafter span = rafter span found in 2) divided by two.
Vertical strut to underpurlin = ridge strut length divided by 2 (if u/p positioned at midspan).
Strut perpendicular to rafter = rafter span x tan° (if u/p positioned at midspan).
Roof load width (RLW) = rafter span (if placed at midspan) otherwise ½ span1 + ½ span2.

Underpurlin & Fan strut example
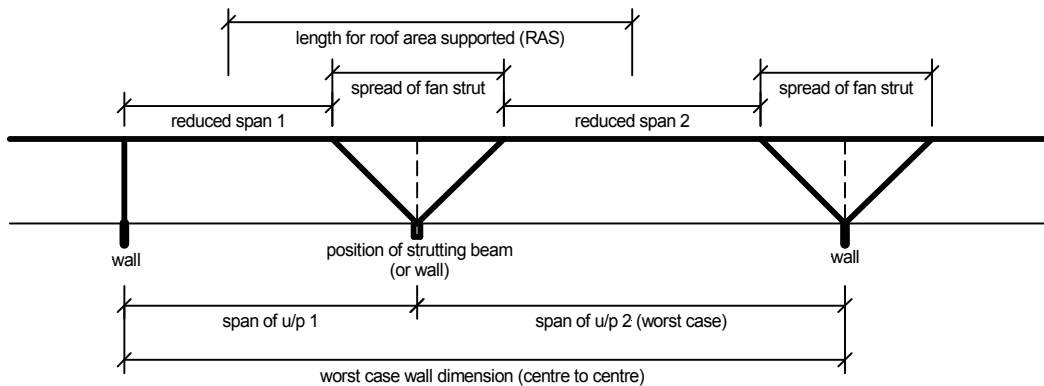
Determine the position of struts (usuallly on supporting walls).
If the distance between supporting walls is excessive a strutting beam may be needed.
Span of underpurlin can also be reduced if fan-strut is used.
Determine the length of the strut (vertical or perpendicular to rafter)
and the dimensions between the struts (or fan-struts).
Find the worst case and calculate the span of the underpurlin.
Roof load area = RLW × ½ u/p span left + ½ u/p span right from strut (or fan strut).
Hanging beams are required if ceiling joist span is excessive.
Place hanging beams in center of room or if needed divide room length/width by 3 (4)
and space them equally.

spread of fan strut

2 x length of strut
(vert. or perp.)

length of fan strut

wall plate

underpurlin

length of strut (vert. or perp.)

position of strutting beam
(or wall)

length of fan strut = strut (vert. or perp.) x square root 2

Calculation (show all numbers):

To avoid selecting an incorrect dimension place all you calculated figures in the sketch

Rafterspan = $\dfrac{}{cos °}$ =

Rafter span (cont.) = / 2 =

Overhang = $\dfrac{}{cos °}$ =

Ridge strut = x tan ° =

Vertical strut (mid span) = / 2 =

Fan strut length (vert) = x $\sqrt{2}$ =

Strut perpendicular to rafter = x tan ° =

Fan strut length (perp) = x $\sqrt{2}$ =

Roof load width (RLW) Underpurlin =

Roof load width (RLW) Wall = + =

Roof load width (RLW) Ridge beam =

Strutting beam 1
Roof area supported = x =

Strutting beam 2
Roof area supported = x =

Strutting beam 3
Roof area supported = x =