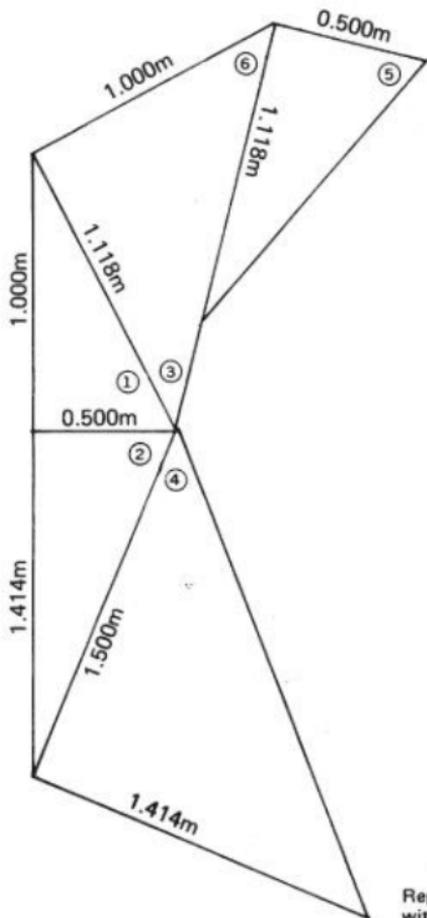
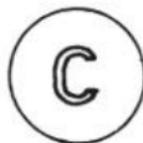


ROOF CUTS & RAFTER LENGTHS

BY HANCOCK'S ROOF BOOKS.



- ① Plumb Cut Rafter
- ② Plumb Cut Hip
- ③ Side Cut Rafter
- ④ Side Cut Hip
- ⑤ Down Cut Purlin
- ⑥ Side Cut Purlin



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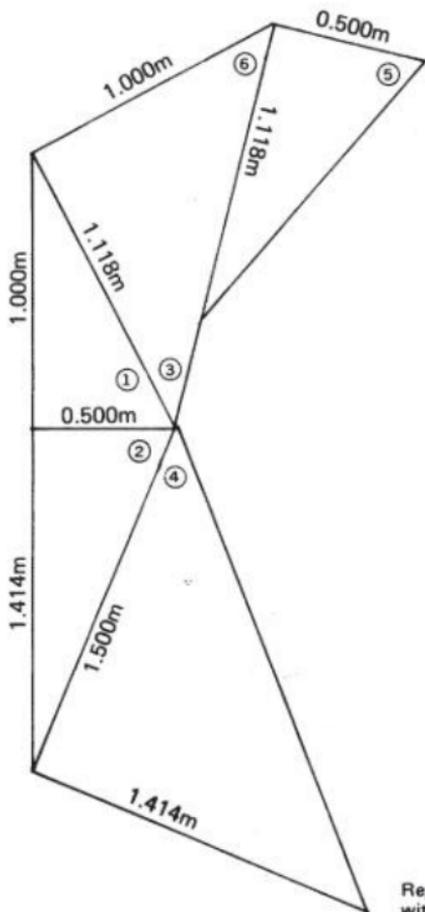
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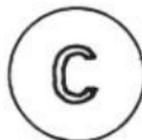
HANCOCK'S ROOF BOOKS.

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FOREWORD

On considering the impact to the building trade by the conversion from Imperial measurement to Metric and the subsequent loss of the information enclosed between the covers of The Apex Rafter Tables, and later, Hancocks Roof Book and further, Roof Cuts and Rafter Lengths, it was decided by the family of the author to perpetuate the memory of the late A.W.Hancock by converting these writings into Metric measurements.

The information gathered in these pages will, with the conversion of the written portion to the appropriate language, be accepted wherever the Metric system is used.

It is the intention of the writer that the language used, and the compilation of the figures in the following tables are so written that any person in English speaking communities with any roofing knowledge at all can use this book with the utmost confidence.

HANCOCKS ROOF BOOKS.

METHOD OF CONSTRUCTION

This method of roof construction is the result of observation on actual work extending over a great number of years as a roofing contractor, specializing in builders' roofing. The figures used in these pages are not new and no one can make claim to have invented them. I do claim however that the method of application belongs to the original author.

For guidance in reading and using all figure groups in this book, it is most important to remember that all such groups are prefixed with the number of metres, followed by the decimal point. Any figures following the decimal point are millimetres.

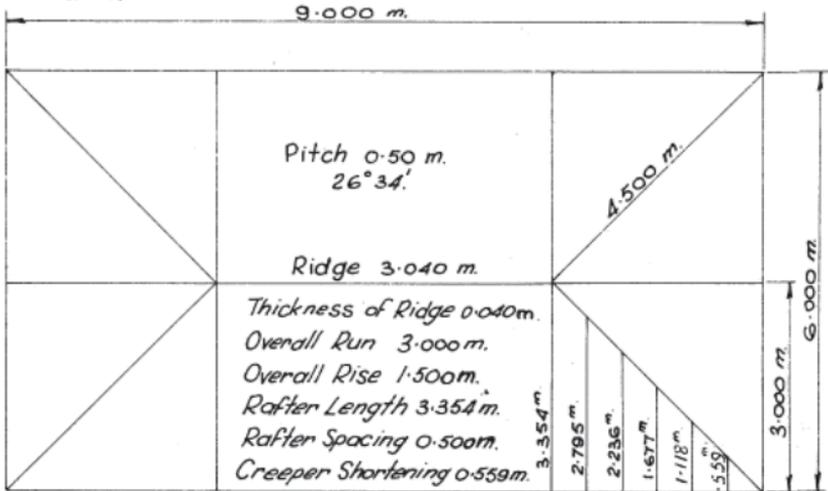
Example:	6.234m	Abbreviations:
	6 m = 6 metres	m = metres
	0.234m = 234 millimetres	mm = millimetres
	0.034m = 34 millimetres	
	0.004m = 4 millimetres	

The writer has endeavoured to show the methods used in setting out the various cuts and has reduced the data so that it can be set out on a piece of timber 0.100m in width (fig.5). It is not necessary to use the drawings showing the cuts (fig.9) as the angle of every cut is given on the same page as the rafter table selected.

SELECTING A PITCH

In most cases the pitch to be used is already given on plans as drawn by architects or designers. Such pitch is generally given in degrees, thus (26°34') equaling $\frac{1}{4}$ pitch. A roof so pitched would rise a quarter of the width of the building to be spanned.

FIG 1.



Any pitch is considered suitable for any type of iron or sheet roofing, providing that undersarking be used for any pitch below 30°, to allow for any condensation that may occur.

If the selected roof covering is terra-cotta tiles or any other semi-porous material, it is advisable that a pitch of 28° or more be used, as the lower the pitch, the more weight is thrust on the inside walls of the building and therefore complicates propping and bracing of the roof.

These tables give a wide range of rafter lengths and we find that by moving up or down one or two pages the pitch of the roof will not be altered much, but may mean full rows of tiles instead of a cut row.

If the pitch selected is less than 28° then under-sarking should be used, as water will soak through and fall onto ceilings below.

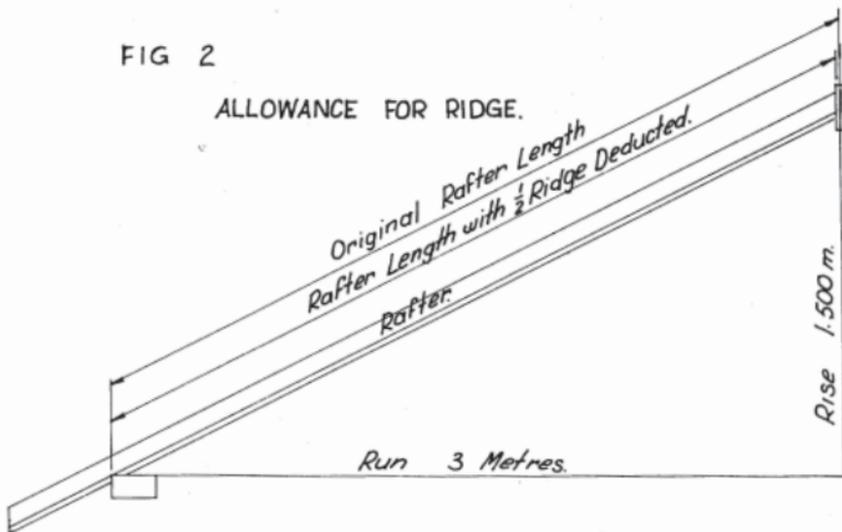
For the purpose of explanation in the use of this book we will select a pitch of 0.500m to 1m run $26^{\circ}34'$.

METHOD USED FOR OBTAINING RAFTER LENGTHS

As this building (fig.1) has a span of 6.000m it follows that the main or common rafter covers half of that span which is 3.000m so that the rafter length as found on table $26^{\circ}34'$ is 3.354m measured from centre of ridge to line of plumb cut at the outside edge of wall plate. From this length, half thickness of the ridge must be deducted. In this case 0.020m as the thickness of the ridge is 0.040m.

FIG 2

ALLOWANCE FOR RIDGE.



The half thickness of ridge should be measured square back from the plumb cut of the rafter (fig.2)

If the span should measure metres and parts of metres e.g. 11.268m; then the writer suggests that the following method be used for obtaining rafter and hip and valley lengths.

RAFTER LENGTH

	Span	11.268m	
	$\frac{1}{2}$ Span	<u>5.634m</u>	
Rafter Length for	5.000m	=	5.590m
"	"	"	0.600m = 0.671m
"	"	"	0.030m = 0.033m
"	"	"	<u>0.004m = 0.004m</u>
	$\frac{1}{2}$ Span	5.634m	
	Original Rafter Length		6.298m
Less Rafter Length for $\frac{1}{2}$ Ridge			<u>0.022m</u>
	Rafter Length		6.276m

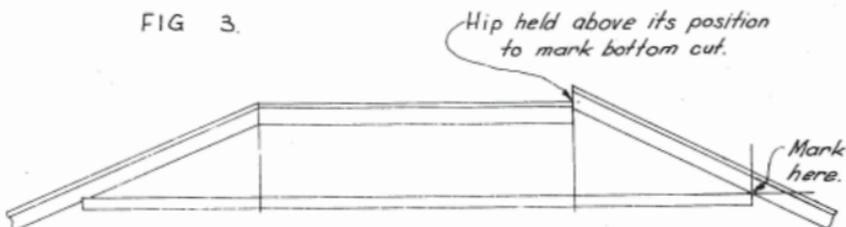
HIP AND VALLEY LENGTH

	Span	11.268m	
	$\frac{1}{2}$ Span	<u>5.634m</u>	
Hip and Valley Length for	5.000m	=	7.500m
"	"	"	0.600m = 0.900m
"	"	"	0.030m = 0.045m
"	"	"	<u>0.004m = 0.006m</u>
	$\frac{1}{2}$ Span	5.634m	

Original Hip and Valley Length	8.451m
Less Hip and Valley Length for $\frac{1}{2}$ Ridge	<u>0.030m</u>
Hip and Valley Length	8.421m

Note: These figures apply only to $26^{\circ}34'$ pitch.
 No allowance is made for overhang.

FIG 3.



LENGTH OF RIDGE

Having determined the length of the common rafters the next step is to find the length of the ridge. If as in general practice, the thickness of the rafters and the ridge are the same, then the length of the ridge is the difference between the length and breadth of the building, plus the thickness of itself. As in fig.1 the length of the building is 9.000m and the breadth is 6.000m, the difference is 3.000m to which is added 0.040m being the thickness of ridge; giving an overall length of 3.040m.

This will allow any common rafter to be used as a jack rafter.

LENGTH OF HIPS

Consult table for 26°34' pitch under Hip and Valley side. Opposite 3.000m in half span column are the figures 4.500m which is the length of the hip for fig.1.

LENGTH OF CREEPER RAFTERS FOR 0.500m SPACINGS

It will be seen on the rafter table 0.500m(26°34') that the length of the rafter for 0.500m is 0.559m and the spacing shown is 0.500m centre to centre or as some builders say, in to over. The shortening for creepers to come down the hip is in all cases the rafter length for the spacing specified.

Taking this as correct, and it is so, we find that the first creeper has to be shortened by the rafter length for 0.500m (which for this pitch is 0.559m) and so on down the hip. This means that 0.559m deducted from the length of the common rafter after the half thickness of the ridge has been taken off, less the half length of the side cut of the hip (as shown on fig.24) measuring always to the short point of the side cut on the top of the rafter, brings the creeper to its correct position at 0.500m spacing.

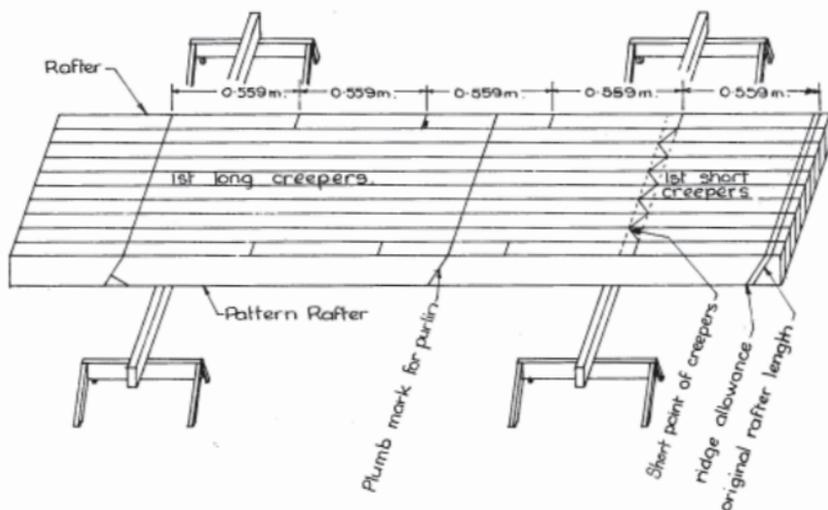
QUANTITIES AND LENGTHS OF TIMBER FOR RAFTERS

In ordering rafters for this roof (fig.1) the quantity is the same as for a gable roof, with one pair of rafters added for jacks. If this were a gable roof the ridge would extend the full length of the building and jacks would not be required. So we order 40/3.500m lengths for rafters. The reason for this, is that the offcut from the first long creeper becomes the shortest

creeper on the other side of the hip, and the offcut from the second longest creeper the second shortest on the other side and so on until all of the offcuts are used.

See method for setting out and cutting of creepers (fig.4). In this paragraph there is no allowance made for overhang; the roof being cut off flush with the outside of the top plate.

FIG. 4. METHOD OF CUTTING CREEPERS.

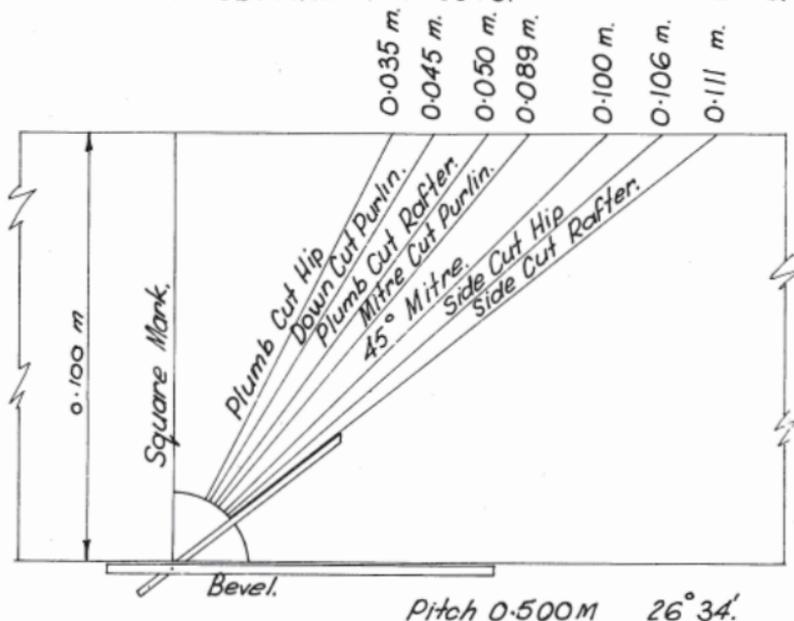


RAFTER HIP AND PURLIN CUTS

On the page of the rafter table dealing with this pitch (0.500m) the angle of every cut is shown. The method used for obtaining these cuts is to take a piece of timber 0.100m wide, or rule a parallel line 0.100m from the straight edge of a wider piece of stuff. Square across at any point and from this square mark set out distances as given in the table and take off with a bevel as shown on fig. 5.

METHOD OF SETTING OUT CUTS.

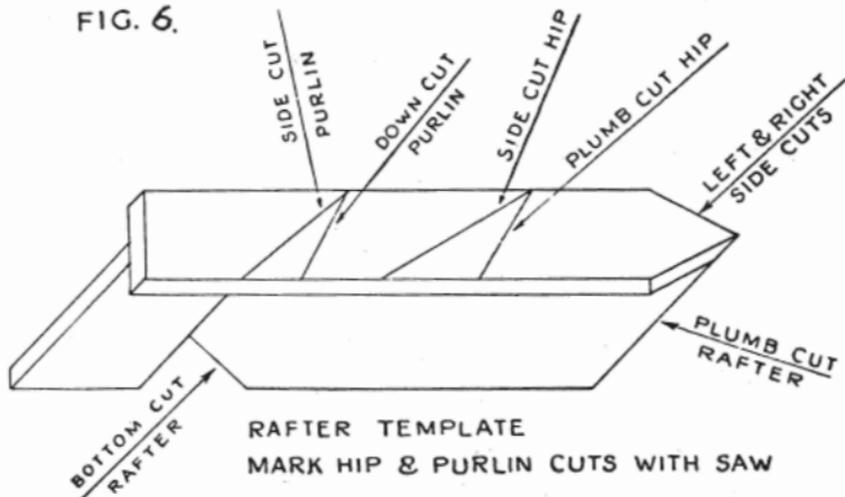
FIG 5.



RAFTER TEMPLATE

At fig. 6 will be found a drawing of a very handy aid for roof cutting. It consists of two pieces of timber approximately 25mm in thickness. (preferably dressed) nailed or screwed together, one member as wide as the material used for rafters, having the top and bottom cuts (rafter) and the other member having the right and left side cuts for creepers. On the back of this template, the plumb and side cuts of the hip and the down and side cuts of the purlin are marked with a cut line or a fine saw cut.

FIG. 6.



This template is used exclusively for marking rafters, (the hip and purlin cuts must be transferred with a sliding bevel) and ensures that every rafter has the same cut and also that the same amount of wood is left in each rafter at the plate line. A different template must be made for each pitch, and the rafter and hip table for that pitch used in conjunction.

LENGTH OF PURLINS

If a purlin is required for a hip roof, you will find the length by adding together the length of the wall plate and ridge and divide by two which gives the length of the purlin on the long side, measured along its centre on top. For the length of the end purlin, take half the length of the wall plate. Where a purlin returns from a hip to a valley, the length of the purlin is the same as the wall plate for that side, taking care to reverse the down cut where it intersects at the valley rafter.

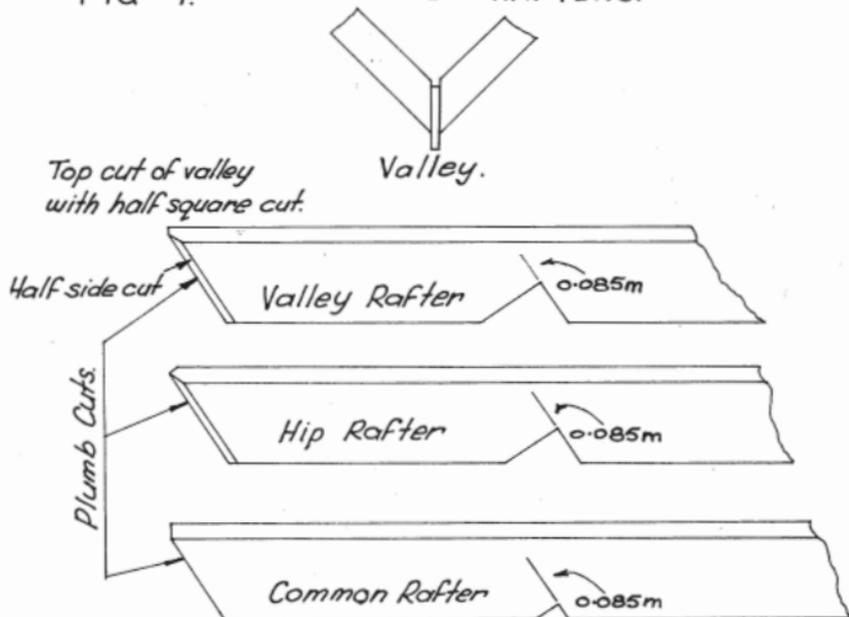
OVERHANG AT EAVES

To simplify the figures, the overhang at the eaves has not been mentioned. Whatever overhang is required, say 0.500m, then the length of the rafter for that distance (0.559m) must be added to the original rafter length as measured to the outside of the wall plate.

HIPS AND RAFTERS IN THE SAME PLANE

To get a good line on the top edge of the rafters at the plate line it is necessary that the same amount of timber be left in the hip, valley and all rafters which must all be in the same plane (see fig. 7).

FIG 7. SHAPES OF RAFTERS.



TACKING RAFTERS

The writer finds it a good idea to start a small nail in each rafter while they are lying on the joists, for tacking them in position and going back over and spiking them properly when the hip is filled.

MARKING RAFTER FOR PURLINS

When setting out rafters, always put a plumb mark on rafters for the centre line of purlins. The same thing applies for battens for an iron or sheeted roof and will save time if this is done while rafters are on cutting bench and not left until roof is pitched.

SELECTING A DEFINITE PITCH

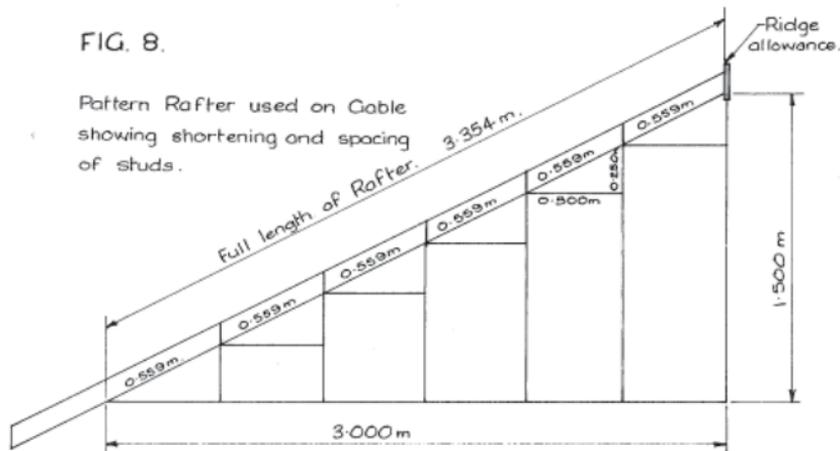
If the plan was drawn by an architect he would specify a definite pitch (in degrees) and it is necessary for any person doing a roofing job to determine first, what rise he intends to give the roof, taking the rise in 1 metre as a definite proportion. If the rise is known, then all the data referring to roof can be found in two minutes from these tables. For instance if a bricklayer building a shaft of a chimney before the roof were pitched should ask, how high is the ridge, and how high would he go with the shaft, well, the building is 6.000m wide and the rise is 0.500m for every 1 metre run, then 3 times 0.500m is 1.500m which is the height of the ridge and he would know how high to go with the shaft.

The carpenter would also know the lengths of the gable studs without going up to measure them. As the roof rises 0.500 in every 1 metre run so do the stud lengths alter in the same proportion. If they are

spaced at 0.500m centres then they would be 0.250m (or half the rise for 1 metre run) shorter each time (fig.8).

FIG. 8.

Pattern Rafter used on Gable showing shortening and spacing of shuds.



RAFTER CUTS

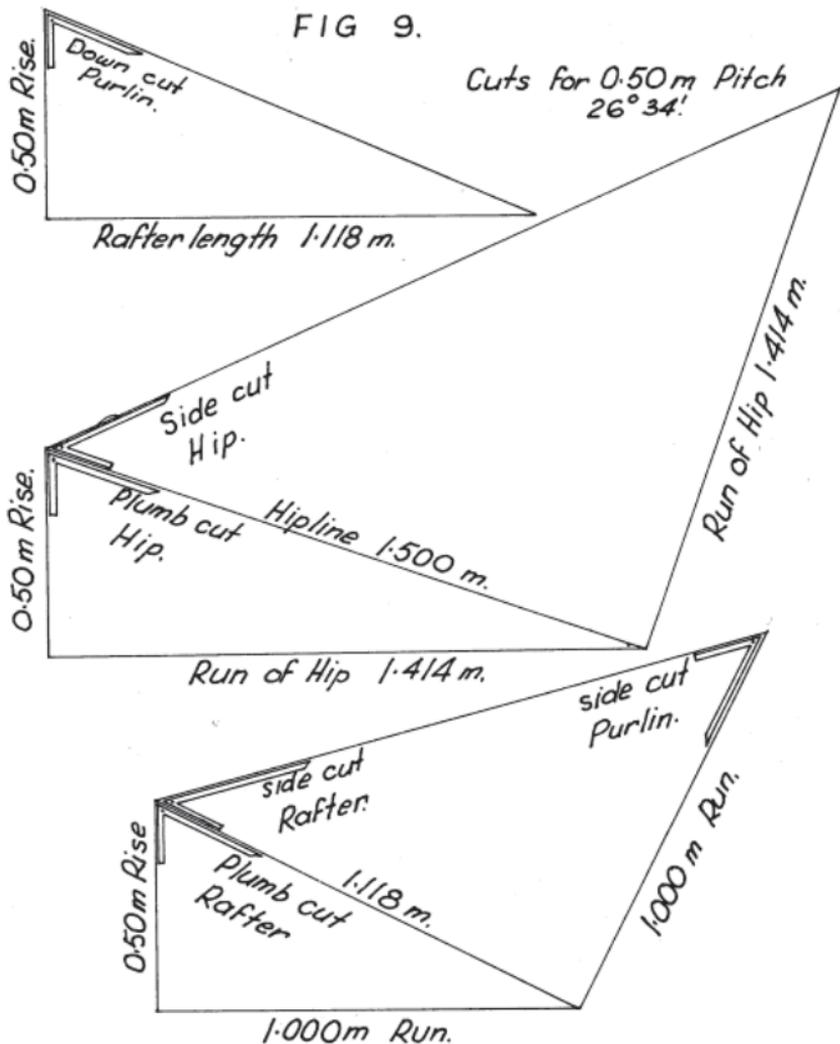
Another method that can be used for obtaining rafter, hip and purlin cuts is contained in fig. 9.

For common rafter and creeper cuts, draw a right angle having the run (1m) on one side and the rise (0.500m) on the other. A diagonal drawn from 1m run to top of rise (0.500m) will be the rafter length for 1m (1.118m). The plumb cut rafter will be found in top corner of rise 0.500m and top of rafter 1.118m and the bottom cut at the corner of run and rafter.

For side cut rafter, draw from bottom corner of run and rafter, a line at 90° or square off to a point at 1m or the same as the run. Draw a diagonal from this

FIG 9.

Cuts for 0.50 m Pitch
 $26^{\circ} 34'$



point to point at top of rise and rafter. The side cut rafter will be found at the top of rise and rafter adjacent to plumb cut rafter and the side cut purlin will be at the other end of the diagonal.

HIP CUTS

To obtain the plumb cut and the side cut of the hip and valley, set out another right angle, having the rise (0.500m) on one side and the run of the hip (1.414m) on the other. A diagonal drawn from top of rise 0.500m to run of hip 1.414m will be hip line and length 1.500m. The plumb cut will be found at top of rise and top of hip line, and bottom cut at the bottom of hip line and run. For the side cut, draw a line at 90° or square off from point at bottom of hip and run to point 1.414m or equal to run of hip. A diagonal drawn from this point to top of hip and rise will give side cut hip at this corner.

DOWN CUT PURLIN

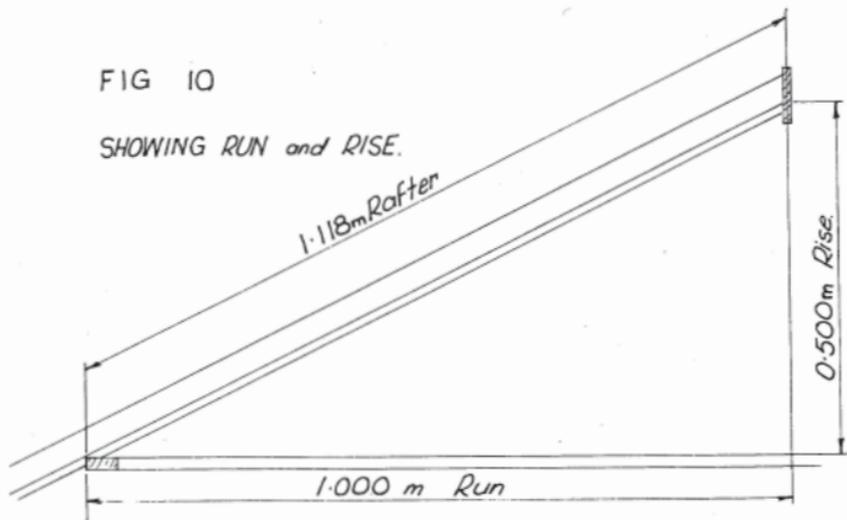
Draw a right angle having the rise (0.500m) on the upright side and the rafter length for 1m (1.118m) on the other. Draw a diagonal from top of 0.500m to 1.118m and the down cut purlin will be found at the 0.500m corner.

RUN OF HIP

The reason that 1.414m is taken as the run of the hip is, that the hip represents the diagonal of a 1m by 1m square, and the diagonal measurement of 1m by 1m is 1.414m, then the run of the hip is 1.414m. These drawings are the same for every pitch except that the

FIG 10

SHOWING RUN and RISE.



rise, and the rafter and hip lengths must be altered accordingly. The rule for obtaining these cuts is, the rise and the run on two sides of a right angle and a diagonal joining the two points gives plumb and bottom cuts and rafter length. A right angle with run on one side and rafter length on the other and a diagonal drawn between these points gives the side cut rafter on the long side and the side cut purlin on the short side. These two cuts are related in all pitches. As the side cut rafter gets longer, the purlin cut gets shorter. In other words one is square of the other. For the hip and valley cut the rise and run are used again, but instead of 1m, the run is 1.414m. With the rise on one side of the right angle and the run on the other, a diagonal drawn from top of rise to 1.414m run will give top and bottom cuts, and also hip length. Another right angle with the hip line 1.500m on one side and its run on the other and a diagonal drawn between these points gives the side cut for the hip and valley. For the down cut purlin, take the rise on

one side of the right angle and the rafter length on the other. A diagonal drawn from the top of rise to the end of rafter length will give the down cut purlin in the top of rise corner.

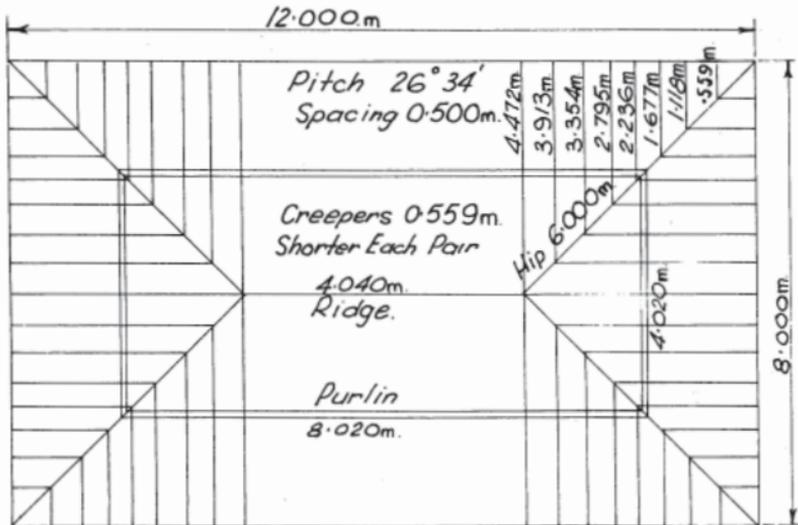
CUTTING HIP AND VALLEY LENGTHS BY FIGURES

The finding of correct hip and valley lengths by figures is inclined to be a bit troublesome. The writer would like to say here that there is no theory that will work satisfactorily, short of measuring from the ridge to the corner of the building, or holding hip in position with the top cut ready, and marking bottom cut when in position. The reasons for making this statement are many. In the first place, if the building is out of square at all, the figures will not apply. Secondly, any inequalities in the wall plates will alter the run; and any discrepancy in the length of the rafters, however slight, will lower or raise the ridge appreciably. This difference would not be noticed in the fit of the rafters but there are two immovable points to fit the hip to. In theory the figures give you the distance as say, 4.000m when in reality it is 4.020m. The hip will definitely drop below its correct seat and must be recut at bottom or packed at the top. For these reasons the writer advocates cutting the hip as shown on fig. 3. If the birdsmouth has to be cut to a depth of 50mm, then hold the hip 50mm higher than its proper position and mark at bottom corner. When cut to fit the plate it will then drop to its correct position.

THE PURLIN SIDE CUT

This cut does not receive the consideration it deserves. As in roofing it is used in various places other than the purlin. It is used on the battens to

FIG 11. ROOF SETOUT By FIGURES.



fit hips on an iron or sheeted roof. It is also the cut for returning the eaves either under or over the hips, as well as being the cut for lining a cove ceiling that returns on a hip. Both purlin cuts are used extensively in hopper building, and it is easy to remember the side cut, as in all pitches it is at right angles to the side cut of the rafter.

SCOTCH VALLEY

At fig.17 a small projecting gable has been imposed on a larger roof to show the difference between the weight carrying capacity of a scotch valley as compared to a valley rafter in the orthodox position. With the scotch valley, although it takes a slightly larger amount of timber, it will carry three times the weight that the valley rafter will. In the case of

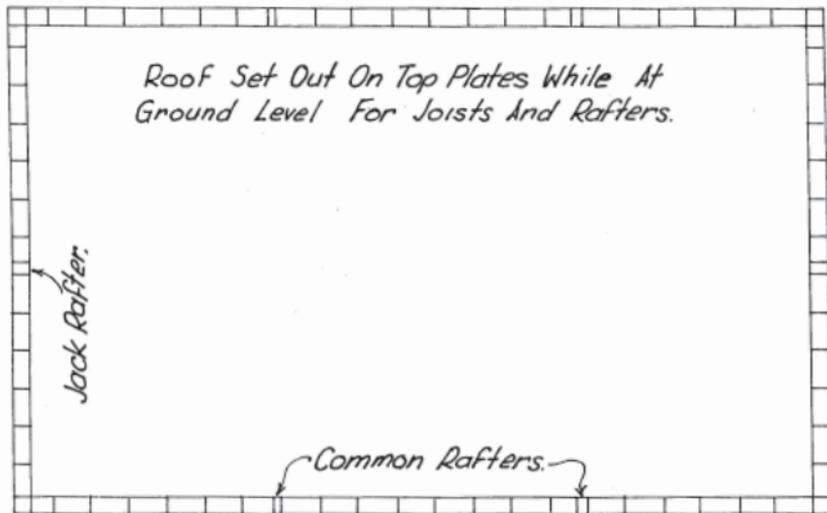
the valley rafter on edge, this rafter is fastened at the top for about half its depth and is cut away at the bottom to the dimension of the seat of the common rafter, and every rafter that abuts on the valley is hanging on nails. The strength of the valley rafter is only as strong as its smallest part. In the case of the scotch valley, the whole weight of the valley rests solidly on the rafters of the main roof which in turn are supported by the purlin. Of course in some cases there is no wall plate to carry these rafters, so in that case the valley rafter must be used. The method of putting in a scotch valley, is to determine the center line of the valley and place the pitch plate that carries the rafters, slightly lower on the main roof. A line strung from the intersection of the projecting ridge and the main roof to bottom position of valley will give position of this pitch plate. It should be low enough to allow the top line of rafters to meet the center line of the valley. The same side cut is used, and the horizontal cut as if fitted to a wall plate.

TO PITCH RAFTERS WHERE THERE IS NO WALL PLATE

It will be found that in some cases it is necessary to pitch ridges where there are no wall plates to hold temporary rafters. In this case as shown on Fig.13, find true pitching point where the wall plate should be and set out a parallel line 0.300m (on top of joists) inside that point. Place a temporary plate on joists at parallel line, to a height of $\frac{3}{10}$ ths of the rise for 1m run, in this case 0.150m from the bottom of joists. Cut a birdsmouth on a temporary rafter 0.335m (which is the length for 0.300m) shorter than its mate, to fit plate. This will bring the ridge to its correct position. This temporary rafter can be cut out when ridge is secured or it can be cut

to fit a valley. In a roof of this kind it is advisable to pitch the high ridge first.

FIG 12.



Always remember that the figures used in these chapters are for 0.500m pitch ($26^{\circ}34'$). If working in any other pitch, the figures for that pitch must be used although the methods are the same.

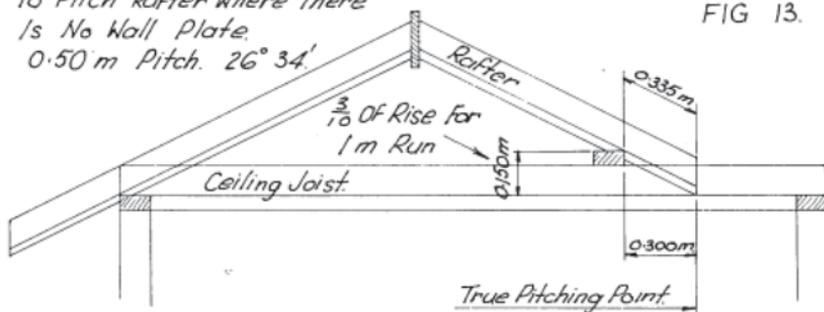
WHEN TO SET OUT ROOF

A fair amount of time can be saved by setting out a roof if the setting out is done on the top plates while they are on the bottom joists in readiness for setting out studs. It is the practice in many cases to try and make a good showing with the framing, so a lot of trimming is left and the framing completed, and the setting out of the top joists and rafters is left until the frame is up, then this work is done off

ladders, when it can be done in one quarter of the time at foundation level. It is the rule in Australian roofing that every rafter be fastened to a corresponding joist as well as the wall plate. So it becomes necessary to set out the main and jack rafters, first marking their seats with saw cuts, and setting out the joists from these points. If this is done correctly it is not necessary to use a rule to complete the top hamper, as each joist is secured on its own mark, and each rafter is fastened to the joist, thus making sure that each is parallel to the others. By the main rafters the writer means the rafters at each end of the ridge and the jack rafters or the rafters that are used to get the ridge in position (Fig.12).

To Pitch Rafter Where There
Is No Wall Plate
0.50 m Pitch. 26° 34'

FIG 13.



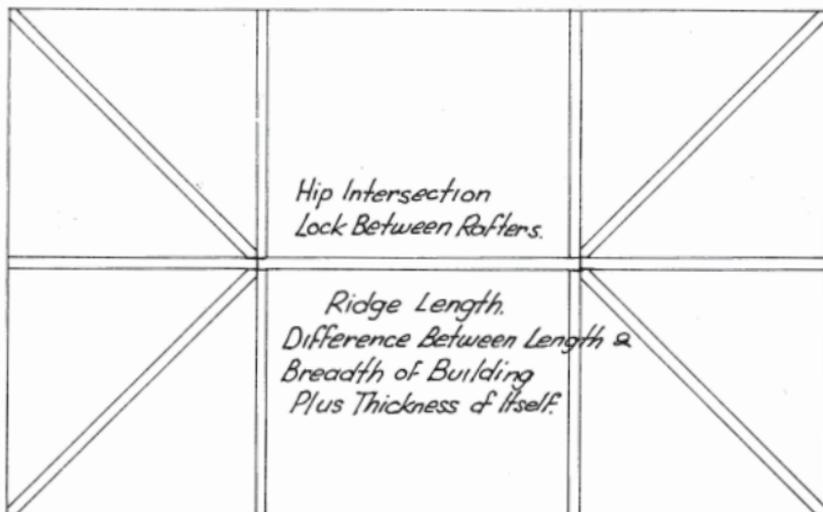
NAMES OF RAFTERS

As the terms "Creeper" and "Jack" occur so many times in these pages it might be just as well at this stage to classify these rafters. In Australian roofing a jack rafter is one that abuts the end of a ridge and all rafters that abut a hip and reach a plate are called creepers whilst a rafter that joins a hip and valley is called a cripple.

STRAIGHTENING HIPS AND VALLEYS

Much unnecessary work is done placing stays on hips and valleys to keep them straight when nailing rafters into position, when in less time one or two pairs of rafters can be put up and tacked for straightening. These rafters, when the hip or valley is pushed into a straight line, will be in their correct position thus making one job out of two. It is advisable with long hips or valleys to place a temporary prop under each to take up the sag. A deep thin hip or valley is better than a thick one, for the reason that a hip or valley carries no weight. Its purpose is to keep the rafters spaced and in position.

FIG 14. INTERSECTIONS.



INTERSECTIONS

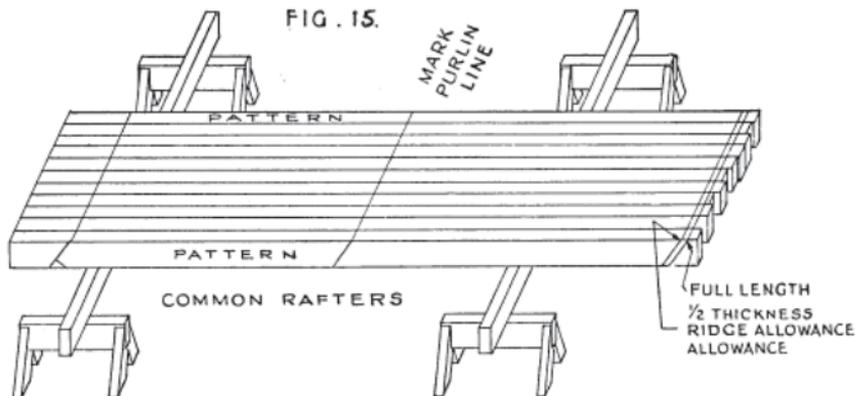
Fig.14 shows the method we use for fitting the tops of hips to the ridge. This is a very old method, and much stronger than the method used by some builders today. The other method used is to let the end rafters stand back from the end of the ridge and fix the hip to the side of it using only one side cut. The old method uses two side cuts.

METHOD OF CUTTING RAFTERS

At Fig.15 is shown a method of marking and cutting rafters. A platform consisting of four trestles and two substantial pieces of timber is made, which gives a carpenter room to work. The method used is to make this platform wide enough to take two sets of creeper rafters, allowing one man to set out and one man to cut. For common or main rafters, set out two patterns, place one each side of eight others, square across at top plumb cut and at birdsmouth and mark across at purlin centre, then mark cuts with rafter template. These two pattern rafters can be marked out with creeper lengths and each set of creepers can be marked from them.

PATTERN RAFTERS AT GABLE ENDS

If this were a gable roof and the same spacings were required for the gable studs, the creeper marks on the pattern rafters if marked on the side with a plumb mark, each mark would be the centre line of the gable studs.



CUTS SET OUT ON AN 0.100m RAFTER

Fig. 5 shows all the cuts for this roof taken from the rafter tables and set out on a piece of timber 0.100m wide, care being taken to see that it is exactly 0.100m wide, as a little more or less will alter the angles. Square across at any point and set out to the figures as given in the tables. If the rafters are not straight and placed with the round up, these cuts will be slightly open at the bottom but will close as they take the weight.

SHAPE OF RAFTERS

Fig. 7 shows the shape of the different rafters and the amount of wood left in each of them.

PROPPING OF PURLINS

When propping purlins, the foot of each prop should be fitted to a short plate spread over at least three joists and not fitted to the wall plate. This is to distribute the weight along the wall as much as possible. Very often a prop is placed on the plate close to or on top of a door stud and the downward thrust will compress or bend the door stud, moving the door jamb out of position, and the neater the door is fitted the more liable it is that the jamb will touch the door. While dealing with the question of propping, it might be in order to say something about the relation of the pitch of the roof to the weight. The writer has been called in to report on the question of repairing and repropping various roofs that sagged badly and in some cases have split the brickwork of walls and torn the joists apart at the junctions. The reason for this in most cases was that the arrangement of the building being composed of large rooms and the roofs pitched too low to allow a correct system of propping to be used. So the whole weight of the roof was pressing down in the centre. On one of these roofs the weight of tiles was 10 tonne. If this roof had been pitched steeper it would have been possible to place props on the interior walls and break the stresses into smaller parts and the collar ties able to do the job for which they were intended. Another cause of roof sagging can be traced to the foundations of buildings. It has always struck the writer as anomalous that although we have an army of building inspectors and sheaves of building regulations, without exception they all specify the same foundation for a light building with an iron roof as for one with double the timber in the roof and perhaps 10 tonne of tiles as well; and what this roof would weigh when wet, the writer would not hazard a guess.

FIG. 16.

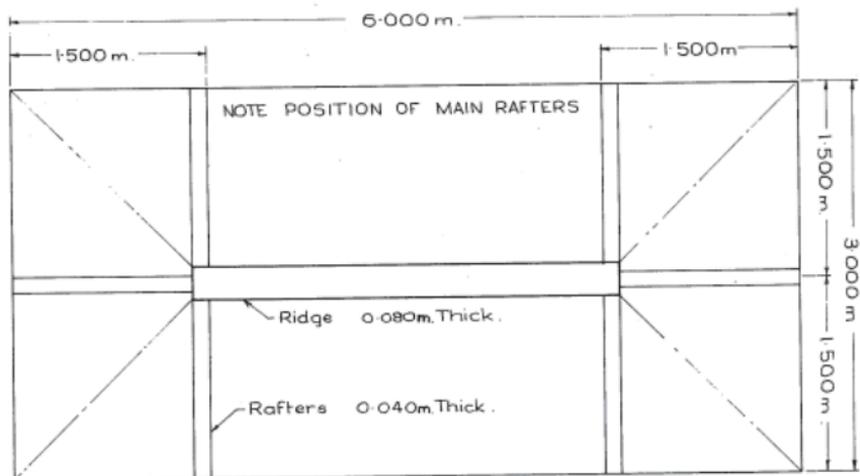
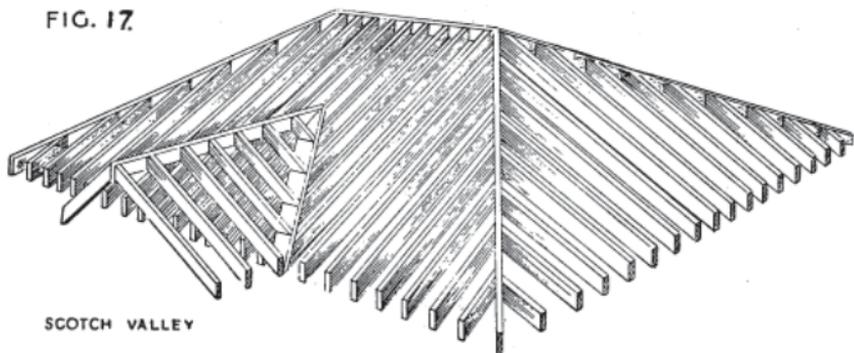
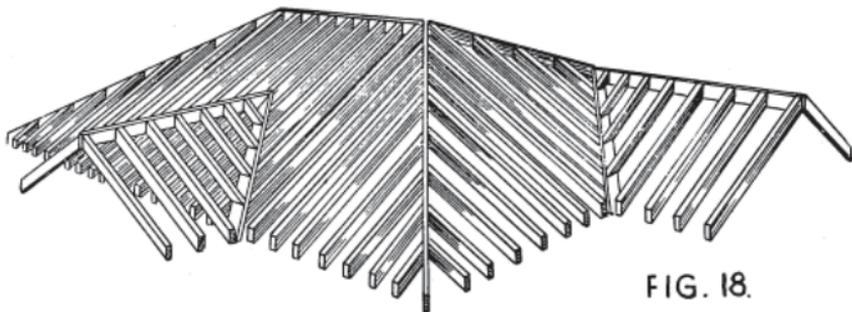


FIG. 17





LENGTH OF RIDGES

The length of the ridge, if the ridge and rafters are of the same thickness, is the difference between the length and breadth of the building to be spanned plus the thickness of itself. If the ridge is thicker than the rafters, then the position of the main pitching rafters would alter as in Fig.16. If the ridge is thinner than the rafters, then the position of the rafters would alter in the opposite direction along the plate.

RAFTER MEASUREMENTS

These rafter lengths are all worked out to an imaginary line in the centre of the building. This line must be substituted by timber, (namely the ridge). So whatever the thickness of this ridge, the half thickness must be taken off the common and jack rafters and also the hips (if hip lengths are taken from tables) measured square back from the plumb cut.

CREEPER RAFTERS

Beneath the hip and valley tables will be found the amount each pair of creepers shorten coming down the hip. In this pitch 0.500m (26°34') each pair of creepers are 0.559m shorter. Take the original length of the rafter before deduction for the ridge and subtract 0.559m from that length and so on, always measuring to the short point on top of the rafter. No deduction is made on creepers for the thickness of hips.

Correct shortening for creepers at any spacings may be obtained by taking the rafter length for the width of the spacing required. That is to say, if the spacing desired was 0.400m, then the rafter length of 0.447m would be the shortening each time.

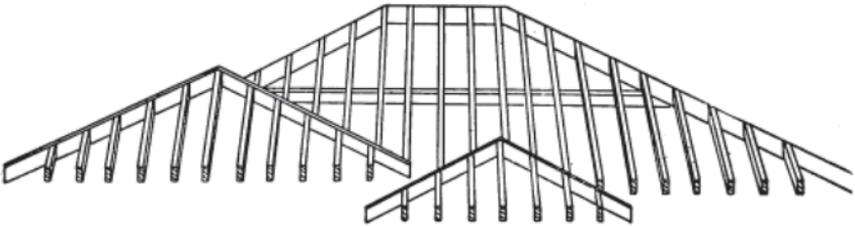


FIG. 19.

JACK RAFTERS

The jack rafters are the same length as the main or common rafters.

TO MEASURE RAFTERS

Always measure rafters from top of plumb cut at top end of rafter to top of plumb cut at plate line at bottom end of rafter.

SCOTCH VALLEY

Where the rafters of one roof rest on top of another roof, the long cut at the foot of same is square off the plumb cut as if it rested on a wall plate. The side cut is the same side cut as the roof it rests on.

CUT FOR GABLE STUDS

The top cut for gable studs or vertical sheeting is the same as the plumb cut rafter. For horizontal sheeting or collar ties, the cut is square off the plumb cut.

BUILDING OUT OF PARALLEL

To cut rafters for a building that is out of parallel, say, 0.130m wider at one end than the other, measure both ends of the building, and if one is 6.000m, and the other 6.130m find the rafter length for 3.000m for one end and the rafter length for 3.065m for the other and mark these two as patterns. Place all the rafters needed for one side of the building on the cutting bench. Place the patterns one on each side, draw a diagonal line from long pattern to short pattern, then separate the rafters and square each one across at diagonal mark. This mark is the top of the plumb cut. The same method applies for levelling a top plate if the base is not level.

VARIOUS TYPES OF EAVES

At figs. 20, 21 and 22 is shown the various types of eaves.

FIG. 20

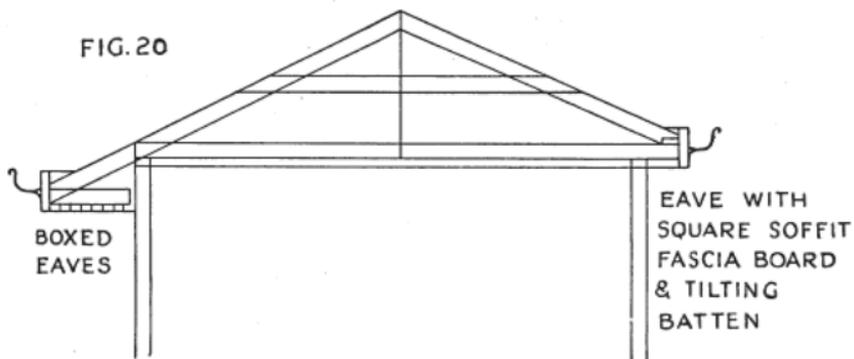


FIG. 21

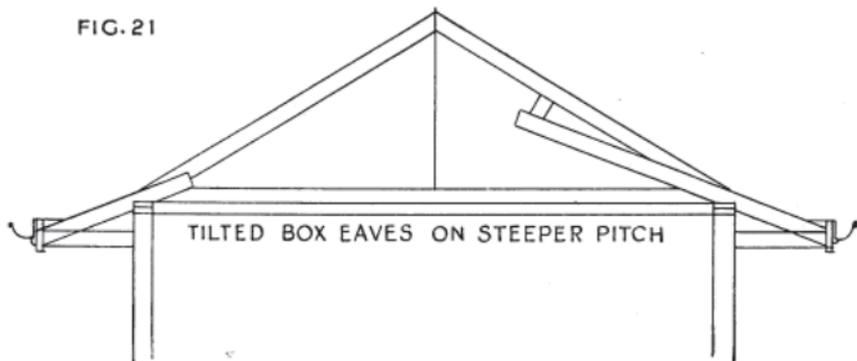
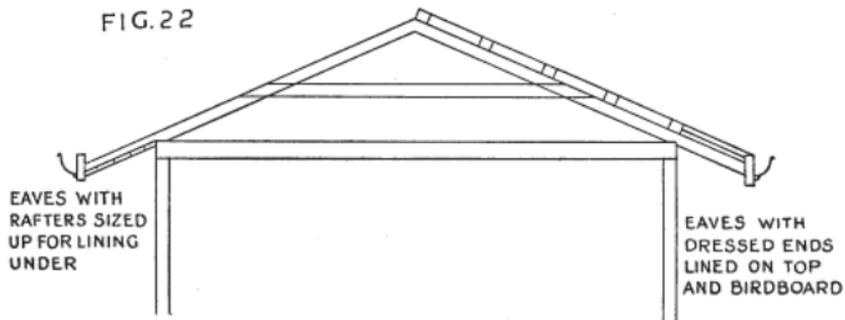


FIG. 22



TILTING BATTEN

In good roofing construction an angle batten commonly known as a tilting batten is placed at the bottom end of the rafters to make a good fixing for the back of spouting and also to tilt the bottom row of tiles up into the same plane as the rest of the tiles. This batten should be cut on the same angle as the plumb cut of the common rafters.

CRIPPLED RAFTERS BETWEEN HIP AND VALLEY

Where a building has a projection and the hip and valley run parallel, an easy method to find the length of the rafters to run between such hip and valley is to find the length of the rafter to cover the length or run of the projection with the same side cuts and both plumb cuts the same way.

LOW RIDGES AND BROKEN HIP

Where there is a broken hip and a lower ridge meeting, this ridge is cut with a mitre and square cut and the bottom of the broken hip is left long and nailed onto the end of the ridge and any surplus length coming in the way of the battens cut off when in position.

LONG HIP

Where there are three long hips and a broken hip, by ordering four hips the full length, the fourth hip will cut the broken or flying hip and the offcut will cut a hip for a lower or projection roof.

BIRD BOARD

The birdsmouth at the bottom end of the rafters should always be cut square so that the rafters will sit up plumb. Any carelessness in making these cuts will make it difficult to fit bird boards.

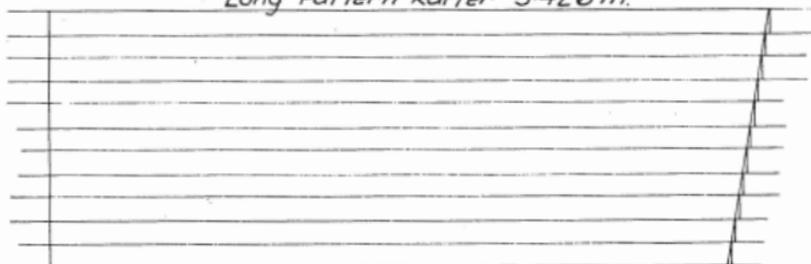
LINING UNDER RAFTERS AT EAVES

Wherever the underside of rafters at the overhang is to be lined, the part of the rafters that overhang the building should be gauged and squared up to one size, ensuring a good line underneath and thus obviating packing.

FIG 23

CUTTING RAFTERS FOR BUILDING OUT OF PARALLEL.

Long Pattern Rafter 3.426 m.



Short Pattern Rafter 3.354 m.

MORE ABOUT HIPS

Before nailing creepers to the hips, string three lines from the top point of hip at ridge, to the top point of hip at plate line, instead of using a gauge line. One line in centre of top of hip and one each side at distance required for comb. See that each line stands away from and does not touch the hip.

DEFINITIONS

Rise means the distance that a rafter rises in any given run, which in these works is given as 1 metre and is unity in all pitches. Rise is measured from the top of the wall plate to the corresponding point at the top of the rafter at ridge, see fig.10. Overall run is the distance a rafter covers when in position.

SQUARE OFF means at 90°

COMMON RAFTER abuts on a ridge with its foot on a wall plate.

CREEPER RAFTER abuts on a hip with its foot on a wall plate.

JACK RAFTER is set at the end of a ridge.

CRIPPLE RAFTER is a rafter that has no foot and abuts at a valley.

SALIENT POINTS

One of the objects of writing this book was that it should be essentially a book of reference to roofing always available in the carpenter's pocket or lunch bag.

How often do you hear the remark; "Leave it until tomorrow and I will look it up tonight at home". This book being of pocket size should be available at all times for reference on the job and I believe that if the reader will go through it, mastering the points one by one he will find that roofing difficulties will disappear and if we go over the salient points once more

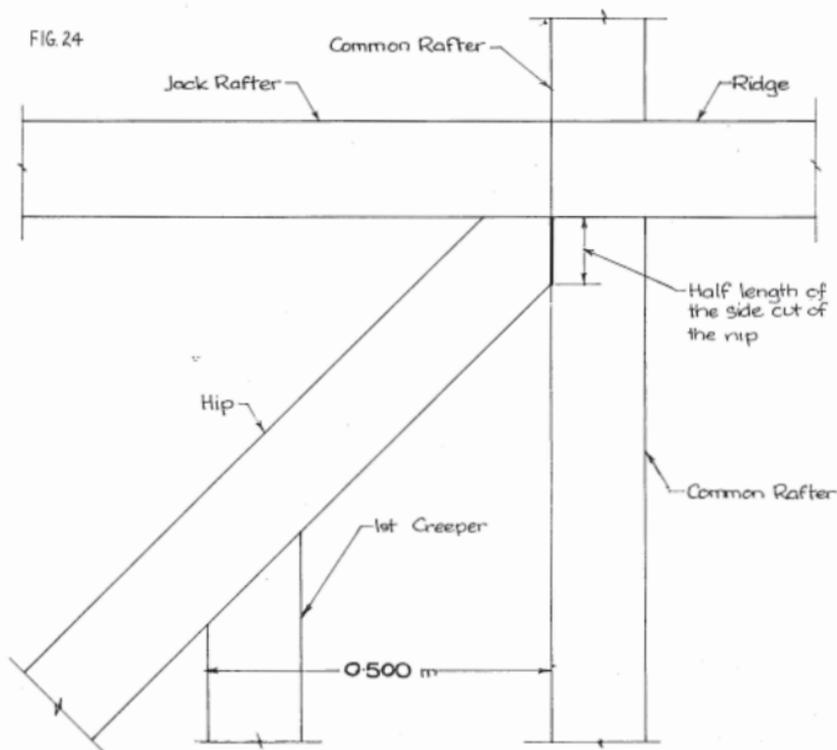
without being tiresome, you will agree with me that I have covered most points.

1. Set out rafters and joists while plates are at ground level.
2. Reason out rise and run. This is the key to the whole business.
3. Cut ridge at right length as directed. If this is done correctly, all materials cut on one side of the hips will fit perfectly on the other side, thus saving roofing materials and time.
4. Take rafter lengths and cuts from the rafter tables.
5. Construct rafter template as shown at fig. 6 for marking rafters.
6. Study the side cut of the purlin you will find many uses for it.
7. Be sure that the hip and valley and the rafters are all in the same plane, that is, leave the same amount of wood in each at the wall plate.
8. String lines at top and bottom of rafters (making sure they are plumb) and scribe with rule when cutting rafters for fascia or spouting line.
9. When propping purlins, do not place props on or near door studs.
10. The tilting batten for tiles and the back of spouting should be cut on the same angle as the plumb cut rafter.
11. Remember that every cut given in this book will work on any square or rectangular hopper of the same pitch.
12. Look after this book, keep it clean, and it will perform at any time.

Finis

Looking back over these pages, the writer concludes that if they were made any bulkier, they would defeat the purpose for which they were meant. There are a few problems not touched upon, but the writer is confident that when the reader has grasped the principles laid down in these pages, he will be quite competent to deal with any unusual problem as it comes along.

HANCOCKS ROOF BOOKS.



NOTES

0.020 Metres Rise to 1 Metre Run 1°9'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.200	0.001	0.001	1.200	1.697
0.002	0.002	1.400	1.400	0.002	0.003	1.400	1.980
0.003	0.003	1.600	1.600	0.003	0.004	1.600	2.263
0.004	0.004	1.800	1.800	0.004	0.006	1.800	2.546
0.005	0.005	2.000	2.000	0.005	0.007	2.000	2.829
0.006	0.006	2.200	2.200	0.006	0.008	2.200	3.112
0.007	0.007	2.400	2.400	0.007	0.010	2.400	3.394
0.008	0.008	2.600	2.600	0.008	0.011	2.600	3.677
0.009	0.009	2.800	2.800	0.009	0.013	2.800	3.960
0.010	0.010	3.000	3.001	0.010	0.014	3.000	4.243
0.020	0.020	3.200	3.201	0.020	0.028	3.200	4.526
0.030	0.030	3.400	3.401	0.030	0.042	3.400	4.809
0.040	0.040	3.600	3.601	0.040	0.056	3.600	5.092
0.050	0.050	3.800	3.801	0.050	0.071	3.800	5.375
0.060	0.060	4.000	4.001	0.060	0.085	4.000	5.657
0.070	0.070	4.200	4.201	0.070	0.099	4.200	5.940
0.080	0.080	4.400	4.401	0.080	0.113	4.400	6.223
0.090	0.090	4.600	4.601	0.090	0.127	4.600	6.506
0.100	0.100	4.800	4.801	0.100	0.141	4.800	6.789
0.200	0.200	5.000	5.001	0.200	0.283	5.000	7.072
0.300	0.300	5.200	5.201	0.300	0.424	5.200	7.355
0.400	0.400	5.400	5.401	0.400	0.566	5.400	7.638
0.500	0.500	5.600	5.601	0.500	0.707	5.600	7.920
0.600	0.600	5.800	5.801	0.600	0.849	5.800	8.203
0.700	0.700	6.000	6.001	0.700	0.990	6.000	8.486
0.800	0.800			0.800	1.131		
0.900	0.900			0.900	1.273		
1.000	1.000			1.000	1.414		
Pl Cut Rftr	0.100 x 0.002	Sd Cut Rftr	0.100 x 0.100				
Pl Cut Hip	0.100 x 0.001	Sd Cut Hip	0.100 x 0.100				
Dn Cut Purl	0.100 x 0.002	Sd Cut Purl	0.100 x 0.100				

Creeper Rftr 0.500 shorter each pair for 0.500 spacing

0.040 Metres Rise to 1 Metre Run 2°17'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.201	0.001	0.001	1.200	1.698
0.002	0.002	1.400	1.401	0.002	0.003	1.400	1.981
0.003	0.003	1.600	1.601	0.003	0.004	1.600	2.264
0.004	0.004	1.800	1.801	0.004	0.006	1.800	2.547
0.005	0.005	2.000	2.002	0.005	0.007	2.000	2.830
0.006	0.006	2.200	2.202	0.006	0.008	2.200	3.112
0.007	0.007	2.400	2.402	0.007	0.010	2.400	3.395
0.008	0.008	2.600	2.602	0.008	0.011	2.600	3.678
0.009	0.009	2.800	2.802	0.009	0.013	2.800	3.961
0.010	0.010	3.000	3.002	0.010	0.014	3.000	4.244
0.020	0.020	3.200	3.202	0.020	0.028	3.200	4.527
0.030	0.030	3.400	3.403	0.030	0.042	3.400	4.810
0.040	0.040	3.600	3.603	0.040	0.056	3.600	5.093
0.050	0.050	3.800	3.803	0.050	0.071	3.800	5.376
0.060	0.060	4.000	4.003	0.060	0.085	4.000	5.659
0.070	0.070	4.200	4.203	0.070	0.099	4.200	5.942
0.080	0.080	4.400	4.403	0.080	0.113	4.400	6.225
0.090	0.090	4.600	4.604	0.090	0.127	4.600	6.508
0.100	0.100	4.800	4.804	0.100	0.141	4.800	6.791
0.200	0.200	5.000	5.004	0.200	0.283	5.000	7.074
0.300	0.300	5.200	5.204	0.300	0.424	5.200	7.357
0.400	0.400	5.400	5.404	0.400	0.566	5.400	7.640
0.500	0.500	5.600	5.604	0.500	0.707	5.600	7.923
0.600	0.600	5.800	5.805	0.600	0.849	5.800	8.206
0.700	0.700	6.000	6.005	0.700	0.990	6.000	8.489
0.800	0.801			0.800	1.132		
0.900	0.901			0.900	1.273		
1.000	0.001			1.000	1.415		

Pl Cut Rftr 0.100 x 0.004	Sd Cut Rftr 0.100 x 0.100
Pl Cut Hip 0.100 x 0.003	Sd Cut Hip 0.100 x 0.100
Dn Cut Pur1 0.100 x 0.004	Sd Cut Pur1 0.100 x 0.100

Creepers Rftr 0.500 shorter each pair for 0.500 spacing

0.060 Metres Rise to 1 Metre Run $3^{\circ}26'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.202	0.001	0.001	1.200	1.699
0.002	0.002	1.400	1.402	0.002	0.003	1.400	1.982
0.003	0.003	1.600	1.603	0.003	0.004	1.600	2.265
0.004	0.004	1.800	1.803	0.004	0.006	1.800	2.548
0.005	0.005	2.000	2.004	0.005	0.007	2.000	2.831
0.006	0.006	2.200	2.204	0.006	0.008	2.200	3.114
0.007	0.007	2.400	2.404	0.007	0.010	2.400	3.397
0.008	0.008	2.600	2.605	0.008	0.011	2.600	3.680
0.009	0.009	2.800	2.805	0.009	0.013	2.800	3.963
0.010	0.010	3.000	3.005	0.010	0.014	3.000	4.246
0.020	0.020	3.200	3.206	0.020	0.028	3.200	4.530
0.030	0.030	3.400	3.406	0.030	0.042	3.400	4.813
0.040	0.040	3.600	3.606	0.040	0.057	3.600	5.096
0.050	0.050	3.800	3.807	0.050	0.071	3.800	5.379
0.060	0.060	4.000	4.007	0.060	0.085	4.000	5.662
0.070	0.070	4.200	4.207	0.070	0.099	4.200	5.945
0.080	0.080	4.400	4.408	0.080	0.113	4.400	6.228
0.090	0.090	4.600	4.608	0.090	0.127	4.600	6.511
0.100	0.100	4.800	4.809	0.100	0.141	4.800	6.794
0.200	0.200	5.000	5.009	0.200	0.283	5.000	7.077
0.300	0.300	5.200	5.209	0.300	0.425	5.200	7.360
0.400	0.401	5.400	5.410	0.400	0.566	5.400	7.644
0.500	0.501	5.600	5.610	0.500	0.708	5.600	7.927
0.600	0.601	5.800	5.810	0.600	0.849	5.800	8.210
0.700	0.701	6.000	6.011	0.700	0.991	6.000	8.493
0.800	0.801			0.800	1.132		
0.900	0.902			0.900	1.274		
1.000	1.002			1.000	1.415		
P1 Cut Rftr	0.100 x 0.006	Sd Cut Rftr	0.100 x 0.100	P1 Cut Hip	0.100 x 0.004	Sd Cut Hip	0.100 x 0.100
Dn Cut Purl	0.100 x 0.006	Sd Cut Purl	0.100 x 0.100				

Creepers Rftr 0.501 shorter each pair for 0.500 spacing

0.080 Metres Rise to 1 Metre Run 4° 34'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.204	0.001	0.001	1.200	1.700
0.002	0.002	1.400	1.404	0.002	0.003	1.400	1.983
0.003	0.003	1.600	1.605	0.003	0.004	1.600	2.266
0.004	0.004	1.800	1.806	0.004	0.006	1.800	2.550
0.005	0.005	2.000	2.006	0.005	0.007	2.000	2.833
0.006	0.006	2.200	2.207	0.006	0.008	2.200	3.116
0.007	0.007	2.400	2.408	0.007	0.010	2.400	3.400
0.008	0.008	2.600	2.608	0.008	0.011	2.600	3.683
0.009	0.009	2.800	2.809	0.009	0.013	2.800	3.966
0.010	0.010	3.000	3.010	0.010	0.014	3.000	4.249
0.020	0.020	3.200	3.210	0.020	0.028	3.200	4.533
0.030	0.030	3.400	3.411	0.030	0.042	3.400	4.816
0.040	0.040	3.600	3.611	0.040	0.057	3.600	5.099
0.050	0.050	3.800	3.812	0.050	0.071	3.800	5.383
0.060	0.060	4.000	4.013	0.060	0.085	4.000	5.666
0.070	0.070	4.200	4.213	0.070	0.099	4.200	5.949
0.080	0.080	4.400	4.414	0.080	0.113	4.400	6.232
0.090	0.090	4.600	4.615	0.090	0.127	4.600	6.516
0.100	0.100	4.800	4.815	0.100	0.142	4.800	6.799
0.200	0.201	5.000	5.016	0.200	0.283	5.000	7.082
0.300	0.301	5.200	5.217	0.300	0.425	5.200	7.366
0.400	0.401	5.400	5.417	0.400	0.567	5.400	7.649
0.500	0.502	5.600	5.618	0.500	0.708	5.600	7.932
0.600	0.602	5.800	5.818	0.600	0.850	5.800	8.216
0.700	0.702	6.000	6.019	0.700	0.991	6.000	8.499
0.800	0.802			0.800	1.133		
0.900	0.903			0.900	1.275		
1.000	1.003			1.000	1.416		

Pl Cut Rftr 0.100 x 0.008 Sd Cut Rftr 0.100 x 0.100
 Pl Cut Hip 0.100 x 0.006 Sd Cut Hip 0.100 x 0.100
 Dn Cut Purl 0.100 x 0.008 Sd Cut Purl 0.100 x 0.100

Creepers Rftr 0.502 shorter each pair for 0.500 spacing

0.100 Metres Rise to 1 Metre Run 5°43'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.206	0.001	0.001	1.200	1.701
0.002	0.002	1.400	1.407	0.002	0.003	1.400	1.985
0.003	0.003	1.600	1.608	0.003	0.004	1.600	2.268
0.004	0.004	1.800	1.809	0.004	0.006	1.800	2.552
0.005	0.005	2.000	2.010	0.005	0.007	2.000	2.835
0.006	0.006	2.200	2.211	0.006	0.008	2.200	3.119
0.007	0.007	2.400	2.412	0.007	0.010	2.400	3.403
0.008	0.008	2.600	2.613	0.008	0.011	2.600	3.686
0.009	0.009	2.800	2.814	0.009	0.013	2.800	3.970
0.010	0.010	3.000	3.015	0.010	0.014	3.000	4.253
0.020	0.020	3.200	3.216	0.020	0.028	3.200	4.537
0.030	0.030	3.400	3.417	0.030	0.042	3.400	4.820
0.040	0.040	3.600	3.618	0.040	0.057	3.600	5.104
0.050	0.050	3.800	3.819	0.050	0.071	3.800	5.387
0.060	0.060	4.000	4.020	0.060	0.085	4.000	5.671
0.070	0.070	4.200	4.221	0.070	0.099	4.200	5.954
0.080	0.080	4.400	4.422	0.080	0.113	4.400	6.238
0.090	0.090	4.600	4.623	0.090	0.127	4.600	6.522
0.100	0.100	4.800	4.824	0.100	0.142	4.800	6.805
0.200	0.201	5.000	5.025	0.200	0.283	5.000	7.089
0.300	0.301	5.200	5.226	0.300	0.425	5.200	7.372
0.400	0.402	5.400	5.427	0.400	0.567	5.400	7.656
0.500	0.502	5.600	5.628	0.500	0.709	5.600	7.939
0.600	0.603	5.800	5.829	0.600	0.851	5.800	8.223
0.700	0.703	6.000	6.030	0.700	0.992	6.000	8.506
0.800	0.804			0.800	1.134		
0.900	0.904			0.900	1.276		
1.000	1.005			1.000	1.418		
Pl Cut Rftr 0.100 x 0.010				Sd Cut Rftr 0.100 x 0.100			
Pl Cut Hip 0.100 x 0.007				Sd Cut Hip 0.100 x 0.100			
Dn Cut Pur1 0.100 x 0.010				Sd Cut Pur1 0.100 x 0.099			

Creep Rftr 0.503 shorter each pair for 0.500 spacing

0.120 Metres Rise to 1 Metre Run $6^{\circ}51'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.209	0.001	0.001	1.200	1.703
0.002	0.002	1.400	1.410	0.002	0.003	1.400	1.987
0.003	0.003	1.600	1.611	0.003	0.004	1.600	2.271
0.004	0.004	1.800	1.813	0.004	0.006	1.800	2.555
0.005	0.005	2.000	2.014	0.005	0.007	2.000	2.838
0.006	0.006	2.200	2.216	0.006	0.008	2.200	3.122
0.007	0.007	2.400	2.417	0.007	0.010	2.400	3.406
0.008	0.008	2.600	2.619	0.008	0.011	2.600	3.690
0.009	0.009	2.800	2.820	0.009	0.013	2.800	3.974
0.010	0.010	3.000	3.021	0.010	0.014	3.000	4.258
0.020	0.020	3.200	3.223	0.020	0.028	3.200	4.542
0.030	0.030	3.400	3.424	0.030	0.042	3.400	4.826
0.040	0.040	3.600	3.626	0.040	0.057	3.600	5.109
0.050	0.050	3.800	3.827	0.050	0.071	3.800	5.393
0.060	0.060	4.000	4.029	0.060	0.085	4.000	5.677
0.070	0.070	4.200	4.230	0.070	0.099	4.200	5.961
0.080	0.080	4.400	4.431	0.080	0.113	4.400	6.245
0.090	0.091	4.600	4.633	0.090	0.128	4.600	6.529
0.100	0.101	4.800	4.834	0.100	0.142	4.800	6.813
0.200	0.201	5.000	5.036	0.200	0.284	5.000	7.096
0.300	0.302	5.200	5.237	0.300	0.426	5.200	7.380
0.400	0.403	5.400	5.439	0.400	0.568	5.400	7.664
0.500	0.503	5.600	5.640	0.500	0.710	5.600	7.948
0.600	0.604	5.800	5.842	0.600	0.851	5.800	8.232
0.700	0.705	6.000	6.043	0.700	0.993	6.000	8.516
0.800	0.806			0.800	1.135		
0.900	0.906			0.900	1.277		
1.000	1.007			1.000	1.419		
Pl Cut Rftr 0.100 x 0.012				Sd Cut Rftr 0.100 x 0.101			
Pl Cut Hip 0.100 x 0.008				Sd Cut Hip 0.100 x 0.100			
Dn Cut Purl 0.100 x 0.012				Sd Cut Purl 0.100 x 0.099			

Creepers Rftr 0.503 shorter each pair for 0.500 spacing

0.140 Metres Rise to 1 Metre Run 7°58'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.212	0.001	0.001	1.200	1.705
0.002	0.002	1.400	1.414	0.002	0.003	1.400	1.989
0.003	0.003	1.600	1.616	0.003	0.004	1.600	2.274
0.004	0.004	1.800	1.817	0.004	0.006	1.800	2.558
0.005	0.005	2.000	2.019	0.005	0.007	2.000	2.842
0.006	0.006	2.200	2.221	0.006	0.008	2.200	3.126
0.007	0.007	2.400	2.423	0.007	0.010	2.400	3.411
0.008	0.008	2.600	2.625	0.008	0.011	2.600	3.695
0.009	0.009	2.800	2.827	0.009	0.013	2.800	3.979
0.010	0.010	3.000	3.029	0.010	0.014	3.000	4.263
0.020	0.020	3.200	3.231	0.020	0.028	3.200	4.548
0.030	0.030	3.400	3.433	0.030	0.043	3.400	4.832
0.040	0.040	3.600	3.635	0.040	0.057	3.600	5.116
0.050	0.050	3.800	3.837	0.050	0.071	3.800	5.400
0.060	0.060	4.000	4.039	0.060	0.085	4.000	5.684
0.070	0.071	4.200	4.241	0.070	0.099	4.200	5.969
0.080	0.081	4.400	4.443	0.080	0.114	4.400	6.253
0.090	0.091	4.600	4.645	0.090	0.128	4.600	6.537
0.100	0.101	4.800	4.847	0.100	0.142	4.800	6.821
0.200	0.202	5.000	5.049	0.200	0.284	5.000	7.106
0.300	0.303	5.200	5.251	0.300	0.426	5.200	7.390
0.400	0.404	5.400	5.453	0.400	0.568	5.400	7.674
0.500	0.505	5.600	5.655	0.500	0.710	5.600	7.958
0.600	0.606	5.800	5.856	0.600	0.853	5.800	8.242
0.700	0.707	6.000	6.058	0.700	0.995	6.000	8.527
0.800	0.808			0.800	1.137		
0.900	0.909			0.900	1.279		
1.000	1.010			1.000	1.421		

P1 Cut Rftr 0.100 x 0.014

Sd Cut Rftr 0.100 x 0.101

P1 Cut Hip 0.100 x 0.010

Sd Cut Hip 0.100 x 0.100

Dn Cut Pur1 0.100 x 0.014

Sd Cut Pur1 0.100 x 0.099

Creeper Rftr 0.505 shorter each pair for 0.500 spacing

0.160 Metres Rise to 1 Metre Run 90°5'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.215	0.001	0.001	1.200	1.708
0.002	0.002	1.400	1.418	0.002	0.003	1.400	1.992
0.003	0.003	1.600	1.620	0.003	0.004	1.600	2.277
0.004	0.004	1.800	1.823	0.004	0.006	1.800	2.562
0.005	0.005	2.000	2.025	0.005	0.007	2.000	2.846
0.006	0.006	2.200	2.228	0.006	0.008	2.200	3.131
0.007	0.007	2.400	2.430	0.007	0.010	2.400	3.416
0.008	0.008	2.600	2.633	0.008	0.011	2.600	3.700
0.009	0.009	2.800	2.836	0.009	0.013	2.800	3.985
0.010	0.010	3.000	3.038	0.010	0.014	3.000	4.270
0.020	0.020	3.200	3.241	0.020	0.028	3.200	4.554
0.030	0.030	3.400	3.443	0.030	0.043	3.400	4.839
0.040	0.040	3.600	3.646	0.040	0.057	3.600	5.124
0.050	0.051	3.800	3.848	0.050	0.071	3.800	5.408
0.060	0.061	4.000	4.051	0.060	0.085	4.000	5.693
0.070	0.071	4.200	4.253	0.070	0.100	4.200	5.977
0.080	0.081	4.400	4.456	0.080	0.114	4.400	6.262
0.090	0.091	4.600	4.658	0.090	0.128	4.600	6.547
0.100	0.101	4.800	4.861	0.100	0.142	4.800	6.831
0.200	0.202	5.000	5.064	0.200	0.285	5.000	7.116
0.300	0.304	5.200	5.266	0.300	0.427	5.200	7.401
0.400	0.405	5.400	5.469	0.400	0.569	5.400	7.685
0.500	0.506	5.600	5.671	0.500	0.712	5.600	7.970
0.600	0.608	5.800	5.874	0.600	0.854	5.800	8.255
0.700	0.709	6.000	6.076	0.700	0.996	6.000	8.539
0.800	0.810			0.800	1.138		
0.900	0.911			0.900	1.281		
1.000	1.013			1.000	1.423		

Pl Cut Rftr 0.100 x 0.016

Pl Cut Hip 0.100 x 0.011

Dn Cut Purl 0.100 x 0.016

Sd Cut Rftr 0.100 x 0.101

Sd Cut Hip 0.100 x 0.101

Sd Cut Purl 0.100 x 0.099

Creepers Rftr 0.506 shorter each pair for 0.500 spacing

0.180 Metres Rise to 1 Metre Run 10°12'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.219	0.001	0.001	1.200	1.711
0.002	0.002	1.400	1.422	0.002	0.003	1.400	1.996
0.003	0.003	1.600	1.626	0.003	0.004	1.600	2.281
0.004	0.004	1.800	1.829	0.004	0.006	1.800	2.566
0.005	0.005	2.000	2.032	0.005	0.007	2.000	2.851
0.006	0.006	2.200	2.235	0.006	0.008	2.200	3.136
0.007	0.007	2.400	2.438	0.007	0.010	2.400	3.421
0.008	0.008	2.600	2.642	0.008	0.011	2.600	3.707
0.009	0.009	2.800	2.845	0.009	0.013	2.800	3.992
0.010	0.010	3.000	3.048	0.010	0.014	3.000	4.277
0.020	0.020	3.200	3.251	0.020	0.028	3.200	4.562
0.030	0.030	3.400	3.455	0.030	0.043	3.400	4.847
0.040	0.041	3.600	3.658	0.040	0.057	3.600	5.132
0.050	0.051	3.800	3.861	0.050	0.071	3.800	5.417
0.060	0.061	4.000	4.064	0.060	0.085	4.000	5.702
0.070	0.071	4.200	4.267	0.070	0.100	4.200	5.988
0.080	0.081	4.400	4.471	0.080	0.114	4.400	6.273
0.090	0.091	4.600	4.674	0.090	0.128	4.600	6.558
0.100	0.102	4.800	4.877	0.100	0.142	4.800	6.843
0.200	0.203	5.000	5.080	0.200	0.285	5.000	7.128
0.300	0.305	5.200	5.283	0.300	0.428	5.200	7.413
0.400	0.406	5.400	5.487	0.400	0.570	5.400	7.698
0.500	0.508	5.600	5.690	0.500	0.713	5.600	7.983
0.600	0.610	5.800	5.893	0.600	0.855	5.800	8.269
0.700	0.711	6.000	6.096	0.700	0.998	6.000	8.554
0.800	0.813			0.800	1.140		
0.900	0.914			0.900	1.283		
1.000	1.016			1.000	1.426		

P1 Cut Rftr 0.100 x 0.018

Sd Cut Rftr 0.100 x 0.102

P1 Cut Hip 0.100 x 0.013

Sd Cut Hip 0.100 x 0.101

Dn Cut Purl 0.100 x 0.018

Sd Cut Purl 0.100 x 0.098

Creeper Rftr 0.508 shorter each pair for 0.500 spacing

0.200 Metres Rise to 1 Metre Run 11°19'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.224	0.001	0.001	1.200	1.714
0.002	0.002	1.400	1.428	0.002	0.003	1.400	2.000
0.003	0.003	1.600	1.632	0.003	0.004	1.600	2.285
0.004	0.004	1.800	1.836	0.004	0.006	1.800	2.571
0.005	0.005	2.000	2.040	0.005	0.007	2.000	2.856
0.006	0.006	2.200	2.243	0.006	0.008	2.200	3.142
0.007	0.007	2.400	2.447	0.007	0.010	2.400	3.428
0.008	0.008	2.600	2.651	0.008	0.011	2.600	3.713
0.009	0.009	2.800	2.855	0.009	0.013	2.800	3.999
0.010	0.010	3.000	3.059	0.010	0.014	3.000	4.285
0.020	0.020	3.200	3.263	0.020	0.028	3.200	4.570
0.030	0.030	3.400	3.467	0.030	0.043	3.400	4.856
0.040	0.041	3.600	3.671	0.040	0.057	3.600	5.142
0.050	0.051	3.800	3.875	0.050	0.071	3.800	5.427
0.060	0.061	4.000	4.079	0.060	0.086	4.000	5.713
0.070	0.071	4.200	4.283	0.070	0.100	4.200	5.999
0.080	0.081	4.400	4.487	0.080	0.114	4.400	6.284
0.090	0.092	4.600	4.691	0.090	0.128	4.600	6.570
0.100	0.102	4.800	4.895	0.100	0.143	4.800	6.856
0.200	0.204	5.000	5.099	0.200	0.286	5.000	7.141
0.300	0.306	5.200	5.303	0.300	0.428	5.200	7.427
0.400	0.408	5.400	5.507	0.400	0.571	5.400	7.713
0.500	0.510	5.600	5.711	0.500	0.714	5.600	7.998
0.600	0.612	5.800	5.915	0.600	0.857	5.800	8.284
0.700	0.714	6.000	6.119	0.700	1.000	6.000	8.570
0.800	0.816			0.800	1.143		
0.900	0.918			0.900	1.285		
1.000	1.020			1.000	1.428		

Pl Cut Rftr 0.100 x 0.020

Sd Cut Rftr 0.100 x 0.102

Pl Cut Hip 0.100 x 0.014

Sd Cut Hip 0.100 x 0.101

Dn Cut Pur1 0.100 x 0.020

Sd Cut Pur1 0.100 x 0.098

Creepers Rftr 0.510 Shorter each pair for 0.500 spacing

0.220 Metres Rise to 1 Metre Run 12° 25'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.229	0.001	0.001	1.200	1.717
0.002	0.002	1.400	1.433	0.002	0.003	1.400	2.004
0.003	0.003	1.600	1.638	0.003	0.004	1.600	2.290
0.004	0.004	1.800	1.843	0.004	0.006	1.800	2.576
0.005	0.005	2.000	2.048	0.005	0.007	2.000	2.862
0.006	0.006	2.200	2.253	0.006	0.008	2.200	3.149
0.007	0.007	2.400	2.457	0.007	0.010	2.400	3.435
0.008	0.008	2.600	2.662	0.008	0.011	2.600	3.721
0.009	0.009	2.800	2.867	0.009	0.013	2.800	4.007
0.010	0.010	3.000	3.072	0.010	0.014	3.000	4.294
0.020	0.020	3.200	3.276	0.020	0.029	3.200	4.580
0.030	0.031	3.400	3.481	0.030	0.043	3.400	4.866
0.040	0.041	3.600	3.686	0.040	0.057	3.600	5.152
0.050	0.051	3.800	3.891	0.050	0.071	3.800	5.439
0.060	0.061	4.000	4.096	0.060	0.086	4.000	5.725
0.070	0.072	4.200	4.300	0.070	0.100	4.200	6.011
0.080	0.082	4.400	4.505	0.080	0.114	4.400	6.297
0.090	0.092	4.600	4.710	0.090	0.129	4.600	6.584
0.100	0.102	4.800	4.915	0.100	0.143	4.800	6.870
0.200	0.205	5.000	5.119	0.200	0.286	5.000	7.156
0.300	0.307	5.200	5.324	0.300	0.429	5.200	7.442
0.400	0.409	5.400	5.529	0.400	0.572	5.400	7.729
0.500	0.512	5.600	5.734	0.500	0.716	5.600	8.015
0.600	0.614	5.800	5.939	0.600	0.859	5.800	8.301
0.700	0.717	6.000	6.143	0.700	1.002	6.000	8.587
0.800	0.819			0.800	1.145		
0.900	0.921			0.900	1.288		
1.000	1.024			1.000	1.431		

P1 Cut Rftr 0.100 x 0.022

P1 Cut Hip 0.100 x 0.015

Dn Cut Pur1 0.100 x 0.021

Sd Cut Rftr 0.100 x 0.102

Sd Cut Hip 0.100 x 0.101

Sd Cut Pur1 0.100 x 0.098

Creepers Rftr 0.512 Shorter each pair for 0.500 spacing

0.240 Metres Rise to 1 Metre Run 13°29'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.234	0.001	0.001	1.200	1.721
0.002	0.002	1.400	1.440	0.002	0.003	1.400	2.008
0.003	0.003	1.600	1.645	0.003	0.004	1.600	2.295
0.004	0.004	1.800	1.851	0.004	0.006	1.800	2.582
0.005	0.005	2.000	2.057	0.005	0.007	2.000	2.869
0.006	0.006	2.200	2.262	0.006	0.009	2.200	3.156
0.007	0.007	2.400	2.468	0.007	0.010	2.400	3.443
0.008	0.008	2.600	2.674	0.008	0.011	2.600	3.729
0.009	0.009	2.800	2.879	0.009	0.013	2.800	4.016
0.010	0.010	3.000	3.085	0.010	0.014	3.000	4.303
0.020	0.020	3.200	3.291	0.020	0.029	3.200	4.590
0.030	0.031	3.400	3.496	0.030	0.043	3.400	4.877
0.040	0.041	3.600	3.702	0.040	0.057	3.600	5.164
0.050	0.051	3.800	3.908	0.050	0.072	3.800	5.451
0.060	0.062	4.000	4.113	0.060	0.086	4.000	5.738
0.070	0.072	4.200	4.319	0.070	0.100	4.200	6.025
0.080	0.082	4.400	4.525	0.080	0.115	4.400	6.311
0.090	0.092	4.600	4.731	0.090	0.129	4.600	6.598
0.100	0.103	4.800	4.936	0.100	0.143	4.800	6.885
0.200	0.206	5.000	5.142	0.200	0.287	5.000	7.172
0.300	0.308	5.200	5.348	0.300	0.430	5.200	7.459
0.400	0.411	5.400	5.553	0.400	0.574	5.400	7.746
0.500	0.514	5.600	5.759	0.500	0.717	5.600	8.033
0.600	0.617	5.800	5.965	0.600	0.861	5.800	8.320
0.700	0.720	6.000	6.170	0.700	1.004	6.000	8.607
0.800	0.823			0.800	1.147		
0.900	0.925			0.900	1.291		
1.000	1.028			1.000	1.434		

Pl Cut Rftr 0.100 x 0.024 Sd Cut Rftr 0.100 x 0.103
 Pl Cut Hip 0.100 x 0.017 Sd Cut Hip 0.100 x 0.101
 Dn Cut Pur1 0.100 x 0.023 Sd Cut Pur1 0.100 x 0.097

Creeper Rftr 0.514 shorter each pair for 0.500 spacing

0.260 Metres Rise to 1 Metre Run 14°34'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.240	0.001	0.001	1.200	1.725
0.002	0.002	1.400	1.446	0.002	0.003	1.400	2.013
0.003	0.003	1.600	1.653	0.003	0.004	1.600	2.301
0.004	0.004	1.800	1.860	0.004	0.006	1.800	2.588
0.005	0.005	2.000	2.066	0.005	0.007	2.000	2.876
0.006	0.006	2.200	2.273	0.006	0.009	2.200	3.163
0.007	0.007	2.400	2.480	0.007	0.010	2.400	3.451
0.008	0.008	2.600	2.686	0.008	0.011	2.600	3.738
0.009	0.009	2.800	2.893	0.009	0.013	2.800	4.026
0.010	0.010	3.000	3.100	0.010	0.014	3.000	4.314
0.020	0.021	3.200	3.306	0.020	0.029	3.200	4.601
0.030	0.031	3.400	3.513	0.030	0.043	3.400	4.889
0.040	0.041	3.600	3.720	0.040	0.057	3.600	5.176
0.050	0.052	3.800	3.926	0.050	0.072	3.800	5.464
0.060	0.062	4.000	4.133	0.060	0.086	4.000	5.752
0.070	0.072	4.200	4.340	0.070	0.101	4.200	6.039
0.080	0.083	4.400	4.546	0.080	0.115	4.400	6.327
0.090	0.093	4.600	4.753	0.090	0.129	4.600	6.614
0.100	0.103	4.800	4.959	0.100	0.144	4.800	6.902
0.200	0.207	5.000	5.166	0.200	0.287	5.000	7.189
0.300	0.310	5.200	5.373	0.300	0.431	5.200	7.477
0.400	0.413	5.400	5.579	0.400	0.575	5.400	7.765
0.500	0.517	5.600	5.786	0.500	0.719	5.600	8.052
0.600	0.620	5.800	5.993	0.600	0.863	5.800	8.340
0.700	0.723	6.000	6.199	0.700	1.006	6.000	8.627
0.800	0.826			0.800	1.150		
0.900	0.930			0.900	1.294		
1.000	1.033			1.000	1.438		

P1 Cut Rftr 0.100 x 0.026

Sd Cut Rftr 0.100 x 0.103

P1 Cut Hip 0.100 x 0.018

Sd Cut Hip 0.100 x 0.102

Dn Cut Pur1 0.100 x 0.025

Sd Cut Pur1 0.100 x 0.097

Creepers Rftr 0.517 shorter each pair for 0.500 spacing

0.280 Metres Rise to 1 Metre Run 15°39'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.246	0.001	0.001	1.200	1.730
0.002	0.002	1.400	1.454	0.002	0.003	1.400	2.018
0.003	0.003	1.600	1.661	0.003	0.004	1.600	2.307
0.004	0.004	1.800	1.869	0.004	0.006	1.800	2.595
0.005	0.005	2.000	2.077	0.005	0.007	2.000	2.883
0.006	0.006	2.200	2.285	0.006	0.009	2.200	3.172
0.007	0.007	2.400	2.492	0.007	0.010	2.400	3.460
0.008	0.008	2.600	2.700	0.008	0.011	2.600	3.748
0.009	0.009	2.800	2.908	0.009	0.013	2.800	4.037
0.010	0.010	3.000	3.115	0.010	0.014	3.000	4.325
0.020	0.021	3.200	3.323	0.020	0.029	3.200	4.613
0.030	0.031	3.400	3.531	0.030	0.043	3.400	4.902
0.040	0.041	3.600	3.738	0.040	0.058	3.600	5.190
0.050	0.052	3.800	3.946	0.050	0.072	3.800	5.478
0.060	0.062	4.000	4.154	0.060	0.086	4.000	5.767
0.070	0.073	4.200	4.361	0.070	0.101	4.200	6.055
0.080	0.083	4.400	4.569	0.080	0.115	4.400	6.343
0.090	0.093	4.600	4.777	0.090	0.130	4.600	6.632
0.100	0.104	4.800	4.985	0.100	0.144	4.800	6.920
0.200	0.208	5.000	5.192	0.200	0.288	5.000	7.208
0.300	0.311	5.200	5.400	0.300	0.432	5.200	7.497
0.400	0.415	5.400	5.608	0.400	0.577	5.400	7.785
0.500	0.519	5.600	5.815	0.500	0.721	5.600	8.073
0.600	0.623	5.800	6.023	0.600	0.865	5.800	8.362
0.700	0.727	6.000	6.231	0.700	1.009	6.000	8.650
0.800	0.831			0.800	1.153		
0.900	0.935			0.900	1.297		
1.000	1.038			1.000	1.442		

Pl Cut Rftr 0.100 x 0.028

Sd Cut Rftr 0.100 x 0.104

Pl Cut Hip 0.100 x 0.020

Sd Cut Hip 0.100 x 0.102

Dn Cut Pur1 0.100 x 0.027

Sd Cut Pur1 0.100 x 0.096

Creeper Rftr 0.519 Shorter each pair for 0.500 spacing

0.300 Metres Rise to 1 Metre Run 16°42'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.253	0.001	0.001	1.200	1.735
0.002	0.002	1.400	1.462	0.002	0.003	1.400	2.024
0.003	0.003	1.600	1.670	0.003	0.004	1.600	2.313
0.004	0.004	1.800	1.879	0.004	0.006	1.800	2.602
0.005	0.005	2.000	2.088	0.005	0.007	2.000	2.891
0.006	0.006	2.200	2.297	0.006	0.009	2.200	3.180
0.007	0.007	2.400	2.506	0.007	0.010	2.400	3.470
0.008	0.008	2.600	2.714	0.008	0.011	2.600	3.759
0.009	0.009	2.800	2.923	0.009	0.013	2.800	4.048
0.010	0.010	3.000	3.132	0.010	0.014	3.000	4.337
0.020	0.021	3.200	3.341	0.020	0.029	3.200	4.626
0.030	0.031	3.400	3.550	0.030	0.043	3.400	4.915
0.040	0.042	3.600	3.758	0.040	0.058	3.600	5.204
0.050	0.052	3.800	3.967	0.050	0.072	3.800	5.494
0.060	0.063	4.000	4.176	0.060	0.087	4.000	5.783
0.070	0.073	4.200	4.385	0.070	0.101	4.200	6.072
0.080	0.083	4.400	4.594	0.080	0.116	4.400	6.361
0.090	0.094	4.600	4.802	0.090	0.130	4.600	6.650
0.100	0.104	4.800	5.011	0.100	0.144	4.800	6.939
0.200	0.209	5.000	5.220	0.200	0.289	5.000	7.228
0.300	0.313	5.200	5.429	0.300	0.434	5.200	7.517
0.400	0.418	5.400	5.638	0.400	0.578	5.400	7.807
0.500	0.522	5.600	5.846	0.500	0.723	5.600	8.096
0.600	0.626	5.800	6.055	0.600	0.867	5.800	8.385
0.700	0.731	6.000	6.264	0.700	1.012	6.000	8.674
0.800	0.835			0.800	1.156		
0.900	0.940			0.900	1.301		
1.000	1.044			1.000	1.446		

Pl Cut Rftr 0.100 x 0.030

Sd Cut Rftr 0.100 x 0.104

Pl Cut Hip 0.100 x 0.021

Sd Cut Hip 0.100 x 0.102

Dn Cut Pur1 0.100 x 0.029

Sd Cut Pur1 0.100 x 0.096

Creepers Rftr 0.522 shorter each pair for 0.500 spacing

0.320 Metres Rise to 1 Metre Run 17°45'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.260	0.001	0.001	1.200	1.740
0.002	0.002	1.400	1.470	0.002	0.003	1.400	2.030
0.003	0.003	1.600	1.680	0.003	0.004	1.600	2.320
0.004	0.004	1.800	1.890	0.004	0.006	1.800	2.610
0.005	0.005	2.000	2.100	0.005	0.007	2.000	2.900
0.006	0.006	2.200	2.310	0.006	0.009	2.200	3.190
0.007	0.007	2.400	2.520	0.007	0.010	2.400	3.480
0.008	0.008	2.600	2.730	0.008	0.011	2.600	3.770
0.009	0.009	2.800	2.940	0.009	0.013	2.800	4.060
0.010	0.010	3.000	3.150	0.010	0.014	3.000	4.350
0.020	0.021	3.200	3.360	0.020	0.029	3.200	4.640
0.030	0.031	3.400	3.570	0.030	0.043	3.400	4.930
0.040	0.042	3.600	3.780	0.040	0.058	3.600	5.220
0.050	0.052	3.800	3.990	0.050	0.072	3.800	5.510
0.060	0.063	4.000	4.200	0.060	0.087	4.000	5.800
0.070	0.073	4.200	4.410	0.070	0.101	4.200	6.090
0.080	0.084	4.400	4.620	0.080	0.116	4.400	6.380
0.090	0.094	4.600	4.830	0.090	0.130	4.600	6.670
0.100	0.105	4.800	5.040	0.100	0.145	4.800	6.960
0.200	0.210	5.000	5.250	0.200	0.290	5.000	7.250
0.300	0.315	5.200	5.460	0.300	0.435	5.200	7.540
0.400	0.420	5.400	5.670	0.400	0.580	5.400	7.830
0.500	0.525	5.600	5.880	0.500	0.725	5.600	8.120
0.600	0.630	5.800	6.090	0.600	0.870	5.800	8.410
0.700	0.735	6.000	6.300	0.700	1.015	6.000	8.700
0.800	0.840			0.800	1.160		
0.900	0.945			0.900	1.305		
1.000	1.050			1.000	1.450		

Pl Cut Rftr 0.100 x 0.032 Sd Cut Rftr 0.100 x 0.105
 Pl Cut Hip 0.100 x 0.023 Sd Cut Hip 0.100 x 0.102
 Dn Cut Purl 0.100 x 0.030 Sd Cut Purl 0.100 x 0.095

Creeper Rftr 0.525 shorter each pair for 0.500 spacing

0.340 Metres Rise to 1 Metre Run 18°47'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.267	0.001	0.001	1.200	1.745
0.002	0.002	1.400	1.479	0.002	0.003	1.400	2.036
0.003	0.003	1.600	1.690	0.003	0.004	1.600	2.327
0.004	0.004	1.800	1.901	0.004	0.006	1.800	2.618
0.005	0.005	2.000	2.112	0.005	0.007	2.000	2.909
0.006	0.006	2.200	2.324	0.006	0.009	2.200	3.200
0.007	0.007	2.400	2.535	0.007	0.010	2.400	3.491
0.008	0.008	2.600	2.746	0.008	0.012	2.600	3.782
0.009	0.009	2.800	2.957	0.009	0.013	2.800	4.073
0.010	0.010	3.000	3.169	0.010	0.014	3.000	4.363
0.020	0.021	3.200	3.380	0.020	0.029	3.200	4.654
0.030	0.032	3.400	3.591	0.030	0.044	3.400	4.945
0.040	0.042	3.600	3.802	0.040	0.058	3.600	5.236
0.050	0.053	3.800	4.014	0.050	0.073	3.800	5.527
0.060	0.063	4.000	4.225	0.060	0.087	4.000	5.818
0.070	0.074	4.200	4.436	0.070	0.102	4.200	6.109
0.080	0.084	4.400	4.647	0.080	0.116	4.400	6.400
0.090	0.095	4.600	4.859	0.090	0.131	4.600	6.691
0.100	0.106	4.800	5.070	0.100	0.145	4.800	6.982
0.200	0.211	5.000	5.281	0.200	0.291	5.000	7.272
0.300	0.317	5.200	5.492	0.300	0.436	5.200	7.563
0.400	0.422	5.400	5.703	0.400	0.582	5.400	7.854
0.500	0.528	5.600	5.915	0.500	0.727	5.600	8.145
0.600	0.634	5.800	6.126	0.600	0.873	5.800	8.436
0.700	0.739	6.000	6.337	0.700	1.018	6.000	8.727
0.800	0.845			0.800	1.164		
0.900	0.950			0.900	1.309		
1.000	1.056			1.000	1.454		

Pl Cut Rftr 0.100 x 0.034

Sd Cut Rftr 0.100 x 0.106

Pl Cut Hip 0.100 x 0.024

Sd Cut Hip 0.100 x 0.103

Dn Cut Pur1 0.100 x 0.032

Sd Cut Pur1 0.100 x 0.095

Creepers Rftr 0.528 shorter each pair for 0.500 spacing

0.360 Metres Rise to 1 Metre Run 19°48'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.275	0.001	0.001	1.200	1.751
0.002	0.002	1.400	1.488	0.002	0.003	1.400	2.043
0.003	0.003	1.600	1.700	0.003	0.004	1.600	2.335
0.004	0.004	1.800	1.913	0.004	0.006	1.800	2.627
0.005	0.005	2.000	2.126	0.005	0.007	2.000	2.919
0.006	0.006	2.200	2.338	0.006	0.009	2.200	3.210
0.007	0.007	2.400	2.551	0.007	0.010	2.400	3.502
0.008	0.008	2.600	2.763	0.008	0.012	2.600	3.794
0.009	0.010	2.800	2.976	0.009	0.013	2.800	4.086
0.010	0.011	3.000	3.188	0.010	0.014	3.000	4.378
0.020	0.021	3.200	3.401	0.020	0.029	3.200	4.670
0.030	0.032	3.400	3.614	0.030	0.044	3.400	4.962
0.040	0.042	3.600	3.826	0.040	0.058	3.600	5.253
0.050	0.053	3.800	4.039	0.050	0.073	3.800	5.545
0.060	0.064	4.000	4.251	0.060	0.087	4.000	5.837
0.070	0.074	4.200	4.464	0.070	0.102	4.200	6.129
0.080	0.085	4.400	4.676	0.080	0.117	4.400	6.421
0.090	0.096	4.600	4.889	0.090	0.131	4.600	6.713
0.100	0.106	4.800	5.101	0.100	0.146	4.800	7.005
0.200	0.212	5.000	5.314	0.200	0.292	5.000	7.296
0.300	0.319	5.200	5.527	0.300	0.438	5.200	7.588
0.400	0.425	5.400	5.739	0.400	0.584	5.400	7.880
0.500	0.531	5.600	5.952	0.500	0.730	5.600	8.172
0.600	0.638	5.800	6.164	0.600	0.875	5.800	8.464
0.700	0.744	6.000	6.377	0.700	1.021	6.000	8.756
0.800	0.850			0.800	1.167		
0.900	0.956			0.900	1.313		
1.000	1.063			1.000	1.459		

P1 Cut Rftr 0.100 x 0.036

Sd Cut Rftr 0.100 x 0.106

P1 Cut Hip 0.100 x 0.025

Sd Cut Hip 0.100 x 0.103

Dn Cut Purl 0.100 x 0.034

Sd Cut Purl 0.100 x 0.094

Creepers Rftr 0.531 shorter each pair for 0.500 spacing

0.380 Metres Rise to 1 Metre Run 20°49'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.284	0.001	0.001	1.200	1.757
0.002	0.002	1.400	1.498	0.002	0.003	1.400	2.050
0.003	0.003	1.600	1.712	0.003	0.004	1.600	2.343
0.004	0.004	1.800	1.925	0.004	0.006	1.800	2.636
0.005	0.005	2.000	2.139	0.005	0.007	2.000	2.929
0.006	0.006	2.200	2.353	0.006	0.009	2.200	3.222
0.007	0.007	2.400	2.567	0.007	0.010	2.400	3.514
0.008	0.009	2.600	2.781	0.008	0.012	2.600	3.807
0.009	0.010	2.800	2.995	0.009	0.013	2.800	4.100
0.010	0.011	3.000	3.209	0.010	0.015	3.000	4.393
0.020	0.021	3.200	3.423	0.020	0.029	3.200	4.686
0.030	0.032	3.400	3.637	0.030	0.044	3.400	4.979
0.040	0.043	3.600	3.851	0.040	0.058	3.600	5.272
0.050	0.053	3.800	4.065	0.050	0.073	3.800	5.565
0.060	0.064	4.000	4.279	0.060	0.088	4.000	5.857
0.070	0.075	4.200	4.493	0.070	0.102	4.200	6.150
0.080	0.085	4.400	4.707	0.080	0.117	4.400	6.443
0.090	0.096	4.600	4.921	0.090	0.132	4.600	6.736
0.100	0.107	4.800	5.135	0.100	0.146	4.800	7.029
0.200	0.214	5.000	5.349	0.200	0.293	5.000	7.322
0.300	0.321	5.200	5.563	0.300	0.439	5.200	7.615
0.400	0.428	5.400	5.777	0.400	0.586	5.400	7.908
0.500	0.535	5.600	5.991	0.500	0.732	5.600	8.200
0.600	0.642	5.800	6.205	0.600	0.879	5.800	8.493
0.700	0.749	6.000	6.418	0.700	1.025	6.000	8.786
0.800	0.856			0.800	1.171		
0.900	0.963			0.900	1.318		
1.000	1.070			1.000	1.464		

P1 Cut Rftr 0.100 x 0.038

Sd Cut Rftr 0.100 x 0.107

P1 Cut Hip 0.100 x 0.027

Sd Cut Hip 0.100 x 0.103

P1 Cut Purl 0.100 x 0.036

Sd Cut Purl 0.100 x 0.093

Creeper Rftr 0.535 Shorter each pair for 0.500 spacing

0.400 Metres Rise to 1 Metre Run 21°48'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.292	0.001	0.001	1.200	1.764
0.002	0.002	1.400	1.508	0.002	0.003	1.400	2.057
0.003	0.003	1.600	1.723	0.003	0.004	1.600	2.351
0.004	0.004	1.800	1.939	0.004	0.006	1.800	2.645
0.005	0.005	2.000	2.154	0.005	0.007	2.000	2.939
0.006	0.006	2.200	2.369	0.006	0.009	2.200	3.233
0.007	0.007	2.400	2.585	0.007	0.010	2.400	3.527
0.008	0.009	2.600	2.800	0.008	0.012	2.600	3.821
0.009	0.010	2.800	3.016	0.009	0.013	2.800	4.115
0.010	0.011	3.000	3.231	0.010	0.015	3.000	4.409
0.020	0.021	3.200	3.446	0.020	0.029	3.200	4.703
0.030	0.032	3.400	3.662	0.030	0.044	3.400	4.997
0.040	0.043	3.600	3.877	0.040	0.059	3.600	5.291
0.050	0.054	3.800	4.093	0.050	0.073	3.800	5.585
0.060	0.065	4.000	4.308	0.060	0.088	4.000	5.879
0.070	0.075	4.200	4.523	0.070	0.103	4.200	6.173
0.080	0.086	4.400	4.739	0.080	0.117	4.400	6.467
0.090	0.097	4.600	4.954	0.090	0.132	4.600	6.760
0.100	0.108	4.800	5.170	0.100	0.147	4.800	7.054
0.200	0.215	5.000	5.385	0.200	0.294	5.000	7.348
0.300	0.323	5.200	5.600	0.300	0.441	5.200	7.642
0.400	0.431	5.400	5.816	0.400	0.588	5.400	7.936
0.500	0.538	5.600	6.031	0.500	0.735	5.600	8.230
0.600	0.646	5.800	6.247	0.600	0.882	5.800	8.524
0.700	0.754	6.000	6.462	0.700	1.029	6.000	8.818
0.800	0.862			0.800	1.176		
0.900	0.969			0.900	1.323		
1.000	1.077			1.000	1.470		

Pl Cut Rftr 0.100 x 0.040

Sd Cut Rftr 0.100 x 0.108

Pl Cut Hip 0.100 x 0.028

Sd Cut Hip 0.100 x 0.104

Dn Cut Pur1 0.100 x 0.037

Sd Cut Pur1 0.100 x 0.093

Creep Rftr 0.538 Shorter each pair for 0.500 spacing

0.420 Metres Rise to 1 Metre Run 22°47'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.301	0.001	0.001	1.200	1.770
0.002	0.002	1.400	1.518	0.002	0.003	1.400	2.065
0.003	0.003	1.600	1.735	0.003	0.004	1.600	2.360
0.004	0.004	1.800	1.952	0.004	0.006	1.800	2.655
0.005	0.005	2.000	2.169	0.005	0.007	2.000	2.950
0.006	0.007	2.200	2.386	0.006	0.009	2.200	3.245
0.007	0.008	2.400	2.603	0.007	0.010	2.400	3.541
0.008	0.009	2.600	2.820	0.008	0.012	2.600	3.836
0.009	0.010	2.800	3.037	0.009	0.013	2.800	4.131
0.010	0.011	3.000	3.254	0.010	0.015	3.000	4.426
0.020	0.022	3.200	3.471	0.020	0.029	3.200	4.721
0.030	0.032	3.400	3.688	0.030	0.044	3.400	5.016
0.040	0.043	3.600	3.905	0.040	0.059	3.600	5.311
0.050	0.054	3.800	4.121	0.050	0.074	3.800	5.606
0.060	0.065	4.000	4.338	0.060	0.088	4.000	5.901
0.070	0.076	4.200	4.555	0.070	0.103	4.200	6.196
0.080	0.087	4.400	4.772	0.080	0.118	4.400	6.491
0.090	0.098	4.600	4.989	0.090	0.133	4.600	6.786
0.100	0.108	4.800	5.206	0.100	0.147	4.800	7.081
0.200	0.217	5.000	5.423	0.200	0.295	5.000	7.376
0.300	0.325	5.200	5.640	0.300	0.442	5.200	7.671
0.400	0.434	5.400	5.857	0.400	0.590	5.400	7.966
0.500	0.542	5.600	6.074	0.500	0.738	5.600	8.261
0.600	0.651	5.800	6.291	0.600	0.885	5.800	8.556
0.700	0.759	6.000	6.508	0.700	1.033	6.000	8.851
0.800	0.868			0.800	1.180		
0.900	0.976			0.900	1.328		
1.000	1.085			1.000	1.475		

P1 Cut Rftr 0.100 x 0.042 Sd Cut Rftr 0.100 x 0.108
 P1 Cut Hip 0.100 x 0.030 Sd Cut Hip 0.100 x 0.104
 Dn Cut Purl 0.100 x 0.039 Sd Cut Purl 0.100 x 0.092

Creeper Rftr 0.542 Shorter each pair for 0.500 spacing

0.440 Metres Rise to 1 Metre Run $23^{\circ}45'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.311	0.001	0.001	1.200	1.777
0.002	0.002	1.400	1.529	0.002	0.003	1.400	2.073
0.003	0.003	1.600	1.748	0.003	0.004	1.600	2.370
0.004	0.004	1.800	1.966	0.004	0.006	1.800	2.666
0.005	0.005	2.000	2.185	0.005	0.007	2.000	2.962
0.006	0.007	2.200	2.403	0.006	0.009	2.200	3.258
0.007	0.008	2.400	2.622	0.007	0.010	2.400	3.554
0.008	0.009	2.600	2.840	0.008	0.012	2.600	3.851
0.009	0.010	2.800	3.059	0.009	0.013	2.800	4.147
0.010	0.011	3.000	3.277	0.010	0.015	3.000	4.443
0.020	0.022	3.200	3.496	0.020	0.030	3.200	4.739
0.030	0.033	3.400	3.714	0.030	0.044	3.400	5.036
0.040	0.044	3.600	3.933	0.040	0.059	3.600	5.332
0.050	0.055	3.800	4.151	0.050	0.074	3.800	5.628
0.060	0.065	4.000	4.370	0.060	0.089	4.000	5.924
0.070	0.076	4.200	4.588	0.070	0.104	4.200	6.220
0.080	0.087	4.400	4.807	0.080	0.118	4.400	6.517
0.090	0.098	4.600	5.025	0.090	0.133	4.600	6.813
0.100	0.109	4.800	5.244	0.100	0.148	4.800	7.109
0.200	0.218	5.000	5.463	0.200	0.296	5.000	7.405
0.300	0.328	5.200	5.681	0.300	0.444	5.200	7.702
0.400	0.437	5.400	5.900	0.400	0.592	5.400	7.998
0.500	0.546	5.600	6.118	0.500	0.740	5.600	8.294
0.600	0.655	5.800	6.337	0.600	0.889	5.800	8.590
0.700	0.765	6.000	6.555	0.700	1.037	6.000	8.886
0.800	0.874			0.800	1.185		
0.900	0.983			0.900	1.333		
1.000	1.092			1.000	1.481		

Pl Cut Rftr 0.100 x 0.044 Sd Cut Rftr 0.100 x 0.109

Pl Cut Hip 0.100 x 0.031 Sd Cut Hip 0.100 x 0.105

Dn Cut Purl 0.100 x 0.040 Sd Cut Purl 0.100 x 0.091

Creep Rftr 0.546 Shorter each pair for 0.500 spacing

0.460 Metres Rise to 1 Metre Run 24°43'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.321	0.001	0.001	1.200	1.784
0.002	0.002	1.400	1.541	0.002	0.003	1.400	2.082
0.003	0.003	1.600	1.761	0.003	0.004	1.600	2.379
0.004	0.004	1.800	1.981	0.004	0.006	1.800	2.677
0.005	0.005	2.000	2.201	0.005	0.007	2.000	2.974
0.006	0.007	2.200	2.421	0.006	0.009	2.200	3.272
0.007	0.008	2.400	2.642	0.007	0.010	2.400	3.569
0.008	0.009	2.600	2.862	0.008	0.012	2.600	3.866
0.009	0.010	2.800	3.082	0.009	0.013	2.800	4.164
0.010	0.011	3.000	3.302	0.010	0.015	3.000	4.461
0.020	0.022	3.200	3.522	0.020	0.030	3.200	4.759
0.030	0.033	3.400	3.742	0.030	0.045	3.400	5.056
0.040	0.044	3.600	3.963	0.040	0.059	3.600	5.354
0.050	0.055	3.800	4.183	0.050	0.074	3.800	5.651
0.060	0.066	4.000	4.403	0.060	0.089	4.000	5.948
0.070	0.077	4.200	4.623	0.070	0.104	4.200	6.246
0.080	0.088	4.400	4.843	0.080	0.119	4.400	6.543
0.090	0.099	4.600	5.063	0.090	0.134	4.600	6.841
0.100	0.110	4.800	5.283	0.100	0.149	4.800	7.138
0.200	0.220	5.000	5.504	0.200	0.297	5.000	7.436
0.300	0.330	5.200	5.724	0.300	0.446	5.200	7.733
0.400	0.440	5.400	5.944	0.400	0.595	5.400	8.030
0.500	0.550	5.600	6.164	0.500	0.743	5.600	8.328
0.600	0.660	5.800	6.384	0.600	0.892	5.800	8.625
0.700	0.770	6.000	6.604	0.700	1.041	6.000	8.923
0.800	0.880			0.800	1.190		
0.900	0.991			0.900	1.338		
1.000	1.101			1.000	1.487		

Pl Cut Rftr 0.100 x 0.046

Sd Cut Rftr 0.100 x 0.110

Pl Cut Hip 0.100 x 0.032

Sd Cut Hip 0.100 x 0.105

Dn Cut Purl 0.100 x 0.042

Sd Cut Purl 0.100 x 0.091

Creeper Rftr 0.550 Shorter Each pair for 0.500 spacing

0.480 Metres Rise to 1 Metre Run 25°38'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.331	0.001	0.001	1.200	1.792
0.002	0.002	1.400	1.553	0.002	0.003	1.400	2.091
0.003	0.003	1.600	1.775	0.003	0.004	1.600	2.389
0.004	0.004	1.800	1.997	0.004	0.006	1.800	2.688
0.005	0.005	2.000	2.218	0.005	0.007	2.000	2.987
0.006	0.007	2.200	2.440	0.006	0.009	2.200	3.285
0.007	0.008	2.400	2.662	0.007	0.010	2.400	3.584
0.008	0.009	2.600	2.884	0.008	0.012	2.600	3.883
0.009	0.010	2.800	3.106	0.009	0.013	2.800	4.182
0.010	0.011	3.000	3.328	0.010	0.015	3.000	4.480
0.020	0.022	3.200	3.549	0.020	0.030	3.200	4.779
0.030	0.033	3.400	3.771	0.030	0.045	3.400	5.078
0.040	0.044	3.600	3.993	0.040	0.060	3.600	5.376
0.050	0.055	3.800	4.215	0.050	0.075	3.800	5.675
0.060	0.066	4.000	4.437	0.060	0.090	4.000	5.974
0.070	0.078	4.200	4.659	0.070	0.104	4.200	6.272
0.080	0.089	4.400	4.881	0.080	0.119	4.400	6.571
0.090	0.100	4.600	5.102	0.090	0.134	4.600	6.870
0.100	0.111	4.800	5.324	0.100	0.149	4.800	7.168
0.200	0.222	5.000	5.546	0.200	0.299	5.000	7.467
0.300	0.333	5.200	5.768	0.300	0.448	5.200	7.766
0.400	0.444	5.400	5.990	0.400	0.597	5.400	8.065
0.500	0.555	5.600	6.212	0.500	0.747	5.600	8.363
0.600	0.665	5.800	6.433	0.600	0.896	5.800	8.662
0.700	0.776	6.000	6.655	0.700	1.045	6.000	8.961
0.800	0.887			0.800	1.195		
0.900	0.998			0.900	1.344		
1.000	1.109			1.000	1.493		

Pl Cut Rftr 0.100 x 0.048 Sd Cut Rftr 0.100 x 0.111
 Pl Cut Hip 0.100 x 0.034 Sd Cut Hip 0.100 x 0.105
 Dn Cut Pur1 0.100 x 0.043 Sd Cut Pur1 0.100 x 0.090

Creepers Rftr 0.555 Shorter each pair for 0.500 spacing

0.500 Metres Rise to 1 Metre Run $26^{\circ}34'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.342	0.001	0.001	1.200	1.800
0.002	0.002	1.400	1.565	0.002	0.003	1.400	2.100
0.003	0.003	1.600	1.789	0.003	0.004	1.600	2.400
0.004	0.004	1.800	2.012	0.004	0.006	1.800	2.700
0.005	0.005	2.000	2.236	0.005	0.007	2.000	3.000
0.006	0.007	2.200	2.460	0.006	0.009	2.200	3.300
0.007	0.008	2.400	2.683	0.007	0.010	2.400	3.600
0.008	0.009	2.600	2.907	0.008	0.012	2.600	3.900
0.009	0.010	2.800	3.130	0.009	0.013	2.800	4.200
0.010	0.011	3.000	3.354	0.010	0.015	3.000	4.500
0.020	0.022	3.200	3.578	0.020	0.030	3.200	4.800
0.030	0.033	3.400	3.801	0.030	0.045	3.400	5.100
0.040	0.045	3.600	4.025	0.040	0.060	3.600	5.400
0.050	0.056	3.800	4.248	0.050	0.075	3.800	5.700
0.060	0.067	4.000	4.472	0.060	0.090	4.000	6.000
0.070	0.078	4.200	4.696	0.070	0.105	4.200	6.300
0.080	0.089	4.400	4.919	0.080	0.120	4.400	6.600
0.090	0.101	4.600	5.143	0.090	0.135	4.600	6.900
0.100	0.112	4.800	5.366	0.100	0.150	4.800	7.200
0.200	0.224	5.000	5.590	0.200	0.300	5.000	7.500
0.300	0.335	5.200	5.814	0.300	0.450	5.200	7.800
0.400	0.447	5.400	6.037	0.400	0.600	5.400	8.100
0.500	0.559	5.600	6.261	0.500	0.750	5.600	8.400
0.600	0.671	5.800	6.484	0.600	0.900	5.800	8.700
0.700	0.783	6.000	6.708	0.700	1.050	6.000	9.000
0.800	0.894			0.800	1.200		
0.900	1.006			0.900	1.350		
1.000	1.118			1.000	1.500		

Pl Cut Rftr 0.100 x 0.050 Sd Cut Rftr 0.100 x 0.112
 Pl Cut Hip 0.100 x 0.035 Sd Cut Hip 0.100 x 0.106
 Dn Cut Pur1 0.100 x 0.045 Sd Cut Pur1 0.100 x 0.089

Creepers Rftr 0.559 Shorter each pair for 0.500 spacing

0.520 Metres Rise to 1 Metre Run 27°28'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.352	0.001	0.001	1.200	1.808
0.002	0.002	1.400	1.578	0.002	0.003	1.400	2.109
0.003	0.003	1.600	1.803	0.003	0.004	1.600	2.411
0.004	0.004	1.800	2.029	0.004	0.006	1.800	2.712
0.005	0.006	2.000	2.254	0.005	0.007	2.000	3.013
0.006	0.007	2.200	2.480	0.006	0.009	2.200	3.315
0.007	0.008	2.400	2.705	0.007	0.010	2.400	3.616
0.008	0.009	2.600	2.930	0.008	0.012	2.600	3.918
0.009	0.010	2.800	3.156	0.009	0.014	2.800	4.219
0.010	0.011	3.000	3.381	0.010	0.015	3.000	4.520
0.020	0.022	3.200	3.607	0.020	0.030	3.200	4.822
0.030	0.034	3.400	3.832	0.030	0.045	3.400	5.123
0.040	0.045	3.600	4.058	0.040	0.060	3.600	5.424
0.050	0.056	3.800	4.283	0.050	0.075	3.800	5.726
0.060	0.068	4.000	4.508	0.060	0.090	4.000	6.027
0.070	0.079	4.200	4.734	0.070	0.105	4.200	6.328
0.080	0.090	4.400	4.959	0.080	0.120	4.400	6.630
0.090	0.101	4.600	5.185	0.090	0.136	4.600	6.931
0.100	0.113	4.800	5.410	0.100	0.151	4.800	7.232
0.200	0.225	5.000	5.636	0.200	0.301	5.000	7.534
0.300	0.338	5.200	5.861	0.300	0.452	5.200	7.835
0.400	0.451	5.400	6.086	0.400	0.603	5.400	8.137
0.500	0.563	5.600	6.312	0.500	0.753	5.600	8.438
0.600	0.676	5.800	6.537	0.600	0.904	5.800	8.739
0.700	0.789	6.000	6.763	0.700	1.055	6.000	9.041
0.800	0.902			0.800	1.205		
0.900	1.014			0.900	1.356		
1.000	1.127			1.000	1.507		

Pl Cut Rftr	0.100 x 0.052	Sd Cut Rftr	0.100 x 0.113
Pl Cut Hip	0.100 x 0.037	Sd Cut Hip	0.100 x 0.106
Dn Cut Purl	0.100 x 0.046	Sd Cut Purl	0.100 x 0.089

Creepers Rftr 0.563 Shorter each pair for 0.500 spacing

0.540 Metres Rise to 1 Metre Run $28^{\circ}22'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.364	0.001	0.001	1.200	1.816
0.002	0.002	1.400	1.591	0.002	0.003	1.400	2.119
0.003	0.003	1.600	1.818	0.003	0.004	1.600	2.422
0.004	0.004	1.800	2.046	0.004	0.006	1.800	2.725
0.005	0.006	2.000	2.273	0.005	0.007	2.000	3.028
0.006	0.007	2.200	2.500	0.006	0.009	2.200	3.330
0.007	0.008	2.400	2.727	0.007	0.010	2.400	3.633
0.008	0.009	2.600	2.955	0.008	0.012	2.600	3.936
0.009	0.010	2.800	3.182	0.009	0.014	2.800	4.239
0.010	0.011	3.000	3.409	0.010	0.015	3.000	4.541
0.020	0.023	3.200	3.637	0.020	0.030	3.200	4.844
0.030	0.034	3.400	3.864	0.030	0.045	3.400	5.147
0.040	0.045	3.600	4.091	0.040	0.060	3.600	5.450
0.050	0.057	3.800	4.319	0.050	0.076	3.800	5.752
0.060	0.068	4.000	4.546	0.060	0.091	4.000	6.055
0.070	0.079	4.200	4.773	0.070	0.106	4.200	6.358
0.080	0.091	4.400	5.000	0.080	0.121	4.400	6.661
0.090	0.102	4.600	5.228	0.090	0.136	4.600	6.963
0.100	0.114	4.800	5.455	0.100	0.151	4.800	7.266
0.200	0.227	5.000	5.682	0.200	0.303	5.000	7.569
0.300	0.341	5.200	5.910	0.300	0.454	5.200	7.872
0.400	0.454	5.400	6.137	0.400	0.605	5.400	8.174
0.500	0.568	5.600	6.364	0.500	0.757	5.600	8.477
0.600	0.682	5.800	6.592	0.600	0.908	5.800	8.780
0.700	0.795	6.000	6.819	0.700	1.060	6.000	9.083
0.800	0.909			0.800	1.211		
0.900	1.023			0.900	1.362		
1.000	1.136			1.000	1.514		

Pl Cut Rftr 0.100 x 0.054 Sd Cut Rftr 0.100 x 0.114
 Pl Cut Hip 0.100 x 0.038 Sd Cut Hip 0.100 x 0.107
 Dn Cut Pur1 0.100 x 0.047 Sd Cut Pur1 0.100 x 0.088

Creaper Rftr 0.568 shorter each pair for 0.500 spacing

0.560 Metres Run to 1 Metre Run 29°15'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.375	0.001	0.001	1.200	1.825
0.002	0.002	1.400	1.604	0.002	0.003	1.400	2.129
0.003	0.003	1.600	1.834	0.003	0.005	1.600	2.434
0.004	0.005	1.800	2.063	0.004	0.006	1.800	2.738
0.005	0.006	2.000	2.292	0.005	0.008	2.000	3.042
0.006	0.007	2.200	2.521	0.006	0.009	2.200	3.346
0.007	0.008	2.400	2.751	0.007	0.011	2.400	3.650
0.008	0.009	2.600	2.980	0.008	0.012	2.600	3.955
0.009	0.010	2.800	3.209	0.009	0.014	2.800	4.259
0.010	0.011	3.000	3.438	0.010	0.015	3.000	4.563
0.020	0.023	3.200	3.667	0.020	0.030	3.200	4.867
0.030	0.034	3.400	3.897	0.030	0.046	3.400	5.171
0.040	0.046	3.600	4.126	0.040	0.061	3.600	5.476
0.050	0.057	3.800	4.355	0.050	0.076	3.800	5.780
0.060	0.069	4.000	4.584	0.060	0.091	4.000	6.084
0.070	0.080	4.200	4.814	0.070	0.106	4.200	6.388
0.080	0.092	4.400	5.043	0.080	0.122	4.400	6.693
0.090	0.103	4.600	5.272	0.090	0.137	4.600	6.997
0.100	0.115	4.800	5.501	0.100	0.152	4.800	7.301
0.200	0.229	5.000	5.731	0.200	0.304	5.000	7.605
0.300	0.344	5.200	5.960	0.300	0.456	5.200	7.909
0.400	0.458	5.400	6.189	0.400	0.608	5.400	8.214
0.500	0.573	5.600	6.418	0.500	0.760	5.600	8.518
0.600	0.688	5.800	6.647	0.600	0.913	5.800	8.822
0.700	0.802	6.000	6.877	0.700	1.065	6.000	9.126
0.800	0.917			0.800	1.217		
0.900	1.031			0.900	1.369		
1.000	1.146			1.000	1.521		

Pl Cut Rftr 0.100 x 0.057 Sd Cut Rftr 0.100 x 0.115
 Pl Cut Hip 0.100 x 0.040 Sd Cut Hip 0.100 x 0.108
 Dn Cut Pur1 0.100 x 0.049 Sd Cut Pur1 0.100 x 0.087

Creepers Rftr 0.573 shorter each pair for 0.500 spacing

0.580 Metres Rise to 1 Metre Run 30°7'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.387	0.001	0.001	1.200	1.834
0.002	0.002	1.400	1.618	0.002	0.003	1.400	2.140
0.003	0.003	1.600	1.850	0.003	0.005	1.600	2.446
0.004	0.005	1.800	2.081	0.004	0.006	1.800	2.751
0.005	0.006	2.000	2.312	0.005	0.008	2.000	3.057
0.006	0.007	2.200	2.543	0.006	0.009	2.200	3.363
0.007	0.008	2.400	2.774	0.007	0.011	2.400	3.668
0.008	0.009	2.600	3.006	0.008	0.012	2.600	3.974
0.009	0.010	2.800	3.237	0.009	0.014	2.800	4.280
0.010	0.011	3.000	3.468	0.010	0.015	3.000	4.585
0.020	0.023	3.200	3.699	0.020	0.030	3.200	4.891
0.030	0.035	3.400	3.930	0.030	0.046	3.400	5.197
0.040	0.046	3.600	4.162	0.040	0.061	3.600	5.503
0.050	0.058	3.800	4.393	0.050	0.076	3.800	5.808
0.060	0.069	4.000	4.624	0.060	0.092	4.000	6.114
0.070	0.081	4.200	4.855	0.070	0.107	4.200	6.420
0.080	0.092	4.400	5.086	0.080	0.122	4.400	6.725
0.090	0.104	4.600	5.318	0.090	0.137	4.600	7.031
0.100	0.116	4.800	5.549	0.100	0.153	4.800	7.337
0.200	0.231	5.000	5.780	0.200	0.306	5.000	7.643
0.300	0.347	5.200	6.011	0.300	0.458	5.200	7.948
0.400	0.462	5.400	6.242	0.400	0.611	5.400	8.254
0.500	0.578	5.600	6.474	0.500	0.764	5.600	8.560
0.600	0.694	5.800	6.705	0.600	0.917	5.800	8.865
0.700	0.809	6.000	6.936	0.700	1.070	6.000	9.171
0.800	0.925			0.800	1.223		
0.900	1.040			0.900	1.376		
1.000	1.156			1.000	1.528		

Pl Cut Rftr 0.100 x 0.058 Sd Cut Rftr 0.100 x 0.116
 Pl Cut Hip 0.100 x 0.041 Sd Cut Hip 0.100 x 0.108
 Dn Cut Pur1 0.100 x 0.050 Sd Cut Pur1 0.100 x 0.086

Creepers Rftr 0.578 shorter each pair for 0.500 spacing

0.600 Metres Rise to 1 Metre Run $30^{\circ}58'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.400	0.001	0.002	1.200	1.843
0.002	0.002	1.400	1.633	0.002	0.003	1.400	2.151
0.003	0.003	1.600	1.866	0.003	0.005	1.600	2.458
0.004	0.005	1.800	2.099	0.004	0.006	1.800	2.765
0.005	0.006	2.000	2.332	0.005	0.008	2.000	3.072
0.006	0.007	2.200	2.566	0.006	0.009	2.200	3.380
0.007	0.008	2.400	2.799	0.007	0.011	2.400	3.687
0.008	0.009	2.600	3.032	0.008	0.012	2.600	3.994
0.009	0.010	2.800	3.265	0.009	0.014	2.800	4.301
0.010	0.012	3.000	3.498	0.010	0.015	3.000	4.609
0.020	0.023	3.200	3.732	0.020	0.031	3.200	4.916
0.030	0.035	3.400	3.965	0.030	0.046	3.400	5.223
0.040	0.047	3.600	4.198	0.040	0.061	3.600	5.530
0.050	0.058	3.800	4.431	0.050	0.077	3.800	5.838
0.060	0.070	4.000	4.665	0.060	0.092	4.000	6.145
0.070	0.082	4.200	4.898	0.070	0.107	4.200	6.452
0.080	0.093	4.400	5.131	0.080	0.123	4.400	6.759
0.090	0.105	4.600	5.364	0.090	0.138	4.600	7.067
0.100	0.117	4.800	5.598	0.100	0.154	4.800	7.374
0.200	0.233	5.000	5.831	0.200	0.307	5.000	7.681
0.300	0.350	5.200	6.064	0.300	0.461	5.200	7.988
0.400	0.466	5.400	6.297	0.400	0.614	5.400	8.296
0.500	0.583	5.600	6.531	0.500	0.768	5.600	8.603
0.600	0.700	5.800	6.764	0.600	0.922	5.800	8.910
0.700	0.816	6.000	6.997	0.700	1.075	6.000	9.217
0.800	0.933			0.800	1.229		
0.900	1.049			0.900	1.382		
1.000	1.166			1.000	1.536		

Pl. Cut Rftr 0.100 x 0.060 Sd Cut Rftr 0.100 x 0.117
 Pl Cut Hip 0.100 x 0.042 Sd Cut Hip 0.100 x 0.109
 Dn Cut Purl 0.100 x 0.051 Sd Cut Purl 0.100 x 0.086

Creeper Rftr 0.583 shorter each pair for 0.500 spacing

0.620 Metres Rise to 1 Metre Run 31.°49'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.412	0.001	0.002	1.200	1.853
0.002	0.002	1.400	1.647	0.002	0.003	1.400	2.162
0.003	0.003	1.600	1.882	0.003	0.005	1.600	2.471
0.004	0.005	1.800	2.118	0.004	0.006	1.800	2.779
0.005	0.006	2.000	2.353	0.005	0.008	2.000	3.088
0.006	0.007	2.200	2.588	0.006	0.009	2.200	3.397
0.007	0.008	2.400	2.824	0.007	0.011	2.400	3.706
0.008	0.009	2.600	3.059	0.008	0.012	2.600	4.015
0.009	0.011	2.800	3.294	0.009	0.014	2.800	4.324
0.010	0.012	3.000	3.530	0.010	0.015	3.000	4.632
0.020	0.023	3.200	3.765	0.020	0.031	3.200	4.941
0.030	0.035	3.400	4.000	0.030	0.046	3.400	5.250
0.040	0.047	3.600	4.236	0.040	0.062	3.600	5.559
0.050	0.059	3.800	4.471	0.050	0.077	3.800	5.868
0.060	0.070	4.000	4.706	0.060	0.093	4.000	6.177
0.070	0.082	4.200	4.942	0.070	0.108	4.200	6.485
0.080	0.094	4.400	5.177	0.080	0.123	4.400	6.794
0.090	0.106	4.600	5.412	0.090	0.139	4.600	7.103
0.100	0.118	4.800	5.648	0.100	0.154	4.800	7.412
0.200	0.235	5.000	5.883	0.200	0.309	5.000	7.721
0.300	0.353	5.200	6.118	0.300	0.463	5.200	8.029
0.400	0.471	5.400	6.354	0.400	0.618	5.400	8.338
0.500	0.588	5.600	6.589	0.500	0.772	5.600	8.647
0.600	0.706	5.800	6.824	0.600	0.926	5.800	8.956
0.700	0.824	6.000	7.060	0.700	1.081	6.000	9.265
0.800	0.941			0.800	1.235		
0.900	1.059			0.900	1.390		
1.000	1.177			1.000	1.544		

P1 Cut Rftr 0.100 x 0.062

Sd Cut Rftr 0.100 x 0.118

P1 Cut Hip 0.100 x 0.044

Sd Cut Hip 0.100 x 0.109

Dn Cut Purl 0.100 x 0.053

Sd Cut Purl 0.100 x 0.085

Creepers Rftr 0.588 shorter each pair for 0.500 spacing

0.640 Metres Rise to 1 Metre Run 32° 37'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.425	0.001	0.002	1.200	1.863
0.002	0.002	1.400	1.662	0.002	0.003	1.400	2.173
0.003	0.003	1.600	1.900	0.003	0.005	1.600	2.484
0.004	0.005	1.800	2.137	0.004	0.006	1.800	2.794
0.005	0.006	2.000	2.374	0.005	0.008	2.000	3.104
0.006	0.007	2.200	2.612	0.006	0.009	2.200	3.415
0.007	0.008	2.400	2.849	0.007	0.011	2.400	3.725
0.008	0.009	2.600	3.087	0.008	0.012	2.600	4.036
0.009	0.011	2.800	3.324	0.009	0.014	2.800	4.346
0.010	0.012	3.000	3.562	0.010	0.015	3.000	4.657
0.020	0.024	3.200	3.799	0.020	0.031	3.200	4.967
0.030	0.036	3.400	4.037	0.030	0.046	3.400	5.278
0.040	0.047	3.600	4.274	0.040	0.062	3.600	5.588
0.050	0.059	3.800	4.512	0.050	0.078	3.800	5.899
0.060	0.071	4.000	4.749	0.060	0.093	4.000	6.209
0.070	0.083	4.200	4.986	0.070	0.109	4.200	6.520
0.080	0.095	4.400	5.224	0.080	0.124	4.400	6.830
0.090	0.107	4.600	5.461	0.090	0.140	4.600	7.140
0.100	0.119	4.800	5.699	0.100	0.155	4.800	7.451
0.200	0.237	5.000	5.936	0.200	0.310	5.000	7.761
0.300	0.356	5.200	6.174	0.300	0.466	5.200	8.072
0.400	0.475	5.400	6.411	0.400	0.621	5.400	8.382
0.500	0.594	5.600	6.649	0.500	0.776	5.600	8.693
0.600	0.712	5.800	6.886	0.600	0.931	5.800	9.003
0.700	0.831	6.000	7.123	0.700	1.086	6.000	9.314
0.800	0.950			0.800	1.242		
0.900	1.068			0.900	1.397		
1.000	1.187			1.000	1.552		

Pl Cut Rftr 0.100 x 0.064 Sd Cut Rftr 0.100 x 0.119
 Pl Cut Hip 0.100 x 0.045 Sd Cut Hip 0.100 x 0.110
 Dn Cut Pur1 0.100 x 0.054 Sd Cut Pur1 0.100 x 0.084

Creepers Rftr 0.594 shorter each pair for 0.500 spacing

0.660 Metres Rise to 1 Metre Run 33°26'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.438	0.001	0.002	1.200	1.873
0.002	0.002	1.400	1.677	0.002	0.003	1.400	2.185
0.003	0.003	1.600	1.917	0.003	0.005	1.600	2.497
0.004	0.005	1.800	2.157	0.004	0.006	1.800	2.809
0.005	0.006	2.000	2.396	0.005	0.008	2.000	3.121
0.006	0.007	2.200	2.636	0.006	0.009	2.200	3.433
0.007	0.008	2.400	2.875	0.007	0.011	2.400	3.745
0.008	0.010	2.600	3.115	0.008	0.012	2.600	4.058
0.009	0.011	2.800	3.355	0.009	0.014	2.800	4.370
0.010	0.012	3.000	3.594	0.010	0.016	3.000	4.682
0.020	0.024	3.200	3.834	0.020	0.031	3.200	4.994
0.030	0.036	3.400	4.074	0.030	0.047	3.400	5.306
0.040	0.048	3.600	4.313	0.040	0.062	3.600	5.618
0.050	0.060	3.800	4.553	0.050	0.078	3.800	5.930
0.060	0.072	4.000	4.793	0.060	0.094	4.000	6.242
0.070	0.084	4.200	5.032	0.070	0.109	4.200	6.555
0.080	0.096	4.400	5.272	0.080	0.125	4.400	6.867
0.090	0.108	4.600	5.511	0.090	0.140	4.600	7.179
0.100	0.120	4.800	5.751	0.100	0.156	4.800	7.491
0.200	0.240	5.000	5.991	0.200	0.312	5.000	7.803
0.300	0.359	5.200	6.230	0.300	0.468	5.200	8.115
0.400	0.479	5.400	6.470	0.400	0.624	5.400	8.427
0.500	0.599	5.600	6.710	0.500	0.780	5.600	8.739
0.600	0.719	5.800	6.949	0.600	0.936	5.800	9.052
0.700	0.839	6.000	7.189	0.700	1.092	6.000	9.364
0.800	0.958			0.800	1.248		
0.900	1.078			0.900	1.404		
1.000	1.198			1.000	1.561		

P1 Cut Rftr 0.100 x 0.066

Sd Cut Rftr 0.100 x 0.120

P1 Cut Hip 0.100 x 0.047

Sd Cut Hip 0.100 x 0.110

Dn Cut Pur1 0.100 x 0.055

Sd Cut Pur1 0.100 x 0.083

Creeper Rftr 0.599 shorter each pair for 0.500 spacing

0.680 Metres Rise to 1 Metre Run $34^{\circ}13'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.451	0.001	0.002	1.200	1.883
0.002	0.002	1.400	1.693	0.002	0.003	1.400	2.197
0.003	0.004	1.600	1.935	0.003	0.005	1.600	2.511
0.004	0.005	1.800	2.177	0.004	0.006	1.800	2.824
0.005	0.006	2.000	2.418	0.005	0.008	2.000	3.138
0.006	0.007	2.200	2.660	0.006	0.009	2.200	3.452
0.007	0.008	2.400	2.902	0.007	0.011	2.400	3.766
0.008	0.010	2.600	3.144	0.008	0.012	2.600	4.080
0.009	0.011	2.800	3.386	0.009	0.014	2.800	4.394
0.010	0.012	3.000	3.628	0.010	0.016	3.000	4.708
0.020	0.024	3.200	3.870	0.020	0.031	3.200	5.021
0.030	0.036	3.400	4.112	0.030	0.047	3.400	5.335
0.040	0.048	3.600	4.353	0.040	0.063	3.600	5.649
0.050	0.060	3.800	4.595	0.050	0.078	3.800	5.963
0.060	0.072	4.000	4.837	0.060	0.094	4.000	6.277
0.070	0.085	4.200	5.079	0.070	0.110	4.200	6.591
0.080	0.097	4.400	5.321	0.080	0.125	4.400	6.904
0.090	0.109	4.600	5.563	0.090	0.141	4.600	7.218
0.100	0.121	4.800	5.805	0.100	0.157	4.800	7.532
0.200	0.242	5.000	6.046	0.200	0.314	5.000	7.846
0.300	0.363	5.200	6.288	0.300	0.471	5.200	8.160
0.400	0.484	5.400	6.530	0.400	0.628	5.400	8.474
0.500	0.605	5.600	6.772	0.500	0.785	5.600	8.787
0.600	0.725	5.800	7.014	0.600	0.941	5.800	9.101
0.700	0.846	6.000	7.256	0.700	1.098	6.000	9.415
0.800	0.967			0.800	1.255		
0.900	1.088			0.900	1.412		
1.000	1.209			1.000	1.569		

Pl Cut Rftr 0.100 x 0.068

Sd Cut Rftr 0.100 x 0.121

Pl Cut Hip 0.100 x 0.048

Sd Cut Hip 0.100 x 0.111

Dn Cut Purl 0.100 x 0.056

Sd Cut Purl 0.100 x 0.083

Creepers Rft. 0.605 shorter each pair for 0.500 spacing

0.700 Metres Rise to 1 Metre Run 34°59'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.465	0.001	0.002	1.200	1.893
0.002	0.002	1.400	1.709	0.002	0.003	1.400	2.209
0.003	0.004	1.600	1.953	0.003	0.005	1.600	2.525
0.004	0.005	1.800	2.197	0.004	0.006	1.800	2.840
0.005	0.006	2.000	2.441	0.005	0.008	2.000	3.156
0.006	0.007	2.200	2.685	0.006	0.009	2.200	3.471
0.007	0.008	2.400	2.929	0.007	0.011	2.400	3.787
0.008	0.010	2.600	3.174	0.008	0.013	2.600	4.103
0.009	0.011	2.800	3.418	0.009	0.014	2.800	4.418
0.010	0.012	3.000	3.662	0.010	0.016	3.000	4.734
0.020	0.024	3.200	3.906	0.020	0.031	3.200	5.049
0.030	0.037	3.400	4.150	0.030	0.047	3.400	5.365
0.040	0.049	3.600	4.394	0.040	0.063	3.600	5.681
0.050	0.061	3.800	4.638	0.050	0.079	3.800	5.996
0.060	0.073	4.000	4.883	0.060	0.095	4.000	6.312
0.070	0.085	4.200	5.127	0.070	0.110	4.200	6.627
0.080	0.098	4.400	5.371	0.080	0.126	4.400	6.943
0.090	0.110	4.600	5.615	0.090	0.142	4.600	7.259
0.100	0.122	4.800	5.859	0.100	0.158	4.800	7.574
0.200	0.244	5.000	6.103	0.200	0.315	5.000	7.890
0.300	0.366	5.200	6.347	0.300	0.473	5.200	8.205
0.400	0.488	5.400	6.591	0.400	0.631	5.400	8.521
0.500	0.610	5.600	6.836	0.500	0.789	5.600	8.837
0.600	0.732	5.800	7.080	0.600	0.947	5.800	9.152
0.700	0.854	6.000	7.324	0.700	1.104	6.000	9.468
0.800	0.976			0.800	1.262		
0.900	1.098			0.900	1.420		
1.000	1.221			1.000	1.578		

Pl Cut Rftr 0.100 x 0.070

Sd Cut Rftr 0.100 x 0.122

Pl Cut Hip 0.100 x 0.049

Sd Cut Hip 0.100 x 0.111

Dn Cut Pur1 0.100 x 0.057

Sd Cut Pur1 0.100 x 0.082

Creeper Rftr 0.610 shorter each pair for 0.500 spacing

0.720 Metres Rise to 1 Metre Run $35^{\circ}45'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.479	0.001	0.002	1.200	1.904
0.002	0.002	1.400	1.725	0.002	0.003	1.400	2.222
0.003	0.004	1.600	1.971	0.003	0.005	1.600	2.539
0.004	0.005	1.800	2.218	0.004	0.006	1.800	2.856
0.005	0.006	2.000	2.464	0.005	0.008	2.000	3.174
0.006	0.007	2.200	2.711	0.006	0.009	2.200	3.491
0.007	0.009	2.400	2.957	0.007	0.011	2.400	3.809
0.008	0.010	2.600	3.204	0.008	0.013	2.600	4.126
0.009	0.011	2.800	3.450	0.009	0.014	2.800	4.443
0.010	0.012	3.000	3.697	0.010	0.016	3.000	4.761
0.020	0.025	3.200	3.943	0.020	0.032	3.200	5.078
0.030	0.037	3.400	4.189	0.030	0.048	3.400	5.396
0.040	0.049	3.600	4.436	0.040	0.063	3.600	5.713
0.050	0.062	3.800	4.682	0.050	0.079	3.800	6.030
0.060	0.074	4.000	4.929	0.060	0.095	4.000	6.348
0.070	0.086	4.200	5.175	0.070	0.111	4.200	6.665
0.080	0.098	4.400	5.422	0.080	0.127	4.400	6.982
0.090	0.111	4.600	5.668	0.090	0.143	4.600	7.300
0.100	0.123	4.800	5.915	0.100	0.159	4.800	7.617
0.200	0.246	5.000	6.161	0.200	0.317	5.000	7.935
0.300	0.370	5.200	6.408	0.300	0.476	5.200	8.252
0.400	0.493	5.400	6.654	0.400	0.635	5.400	8.569
0.500	0.616	5.600	6.900	0.500	0.793	5.600	8.887
0.600	0.739	5.800	7.147	0.600	0.952	5.800	9.204
0.700	0.862	6.000	7.393	0.700	1.111	6.000	9.522
0.800	0.986			0.800	1.269		
0.900	1.109			0.900	1.428		
1.000	1.232			1.000	1.587		

Pl. Cut Rftr 0.100 x 0.072

Sd Cut Rftr 0.100 x 0.123

Pl Cut Hip 0.100 x 0.051

Sd Cut Hip 0.100 x 0.112

Dn Cut Pur1 0.100 x 0.058

Sd Cut Pur1 0.100 x 0.081

Creepers Rftr 0.616 Shorter each pair for 0.500 spacing

0.740 Metres Rise to 1 Metre Run 36° 30'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.493	0.001	0.002	1.200	1.915
0.002	0.002	1.400	1.742	0.002	0.003	1.400	2.234
0.003	0.004	1.600	1.990	0.003	0.005	1.600	2.554
0.004	0.005	1.800	2.239	0.004	0.006	1.800	2.873
0.005	0.006	2.000	2.488	0.005	0.008	2.000	3.192
0.006	0.007	2.200	2.737	0.006	0.009	2.200	3.511
0.007	0.009	2.400	2.986	0.007	0.011	2.400	3.831
0.008	0.010	2.600	3.234	0.008	0.013	2.600	4.150
0.009	0.011	2.800	3.483	0.009	0.014	2.800	4.469
0.010	0.012	3.000	3.732	0.010	0.016	3.000	4.788
0.020	0.025	3.200	3.981	0.020	0.032	3.200	5.107
0.030	0.037	3.400	4.230	0.030	0.048	3.400	5.427
0.040	0.050	3.600	4.478	0.040	0.064	3.600	5.746
0.050	0.062	3.800	4.727	0.050	0.080	3.800	6.065
0.060	0.075	4.000	4.976	0.060	0.096	4.000	6.384
0.070	0.087	4.200	5.225	0.070	0.112	4.200	6.704
0.080	0.099	4.400	5.474	0.080	0.128	4.400	7.023
0.090	0.112	4.600	5.722	0.090	0.144	4.600	7.342
0.100	0.124	4.800	5.971	0.100	0.160	4.800	7.661
0.200	0.249	5.000	6.220	0.200	0.319	5.000	7.981
0.300	0.373	5.200	6.469	0.300	0.479	5.200	8.300
0.400	0.498	5.400	6.718	0.400	0.638	5.400	8.619
0.500	0.622	5.600	6.966	0.500	0.798	5.600	8.938
0.600	0.746	5.800	7.215	0.600	0.958	5.800	9.257
0.700	0.871	6.000	7.464	0.700	1.117	6.000	9.577
0.800	0.995			0.800	1.277		
0.900	1.120			0.900	1.436		
1.000	1.244			1.000	1.596		

Pl Cut Rftr 0.100 x 0.074

Sd Cut Rftr 0.100 x 0.124

Pl Cut Hip 0.100 x 0.052

Sd Cut Hip 0.100 x 0.113

Dn Cut Purl 0.100 x 0.059

Sd Cut Purl 0.100 x 0.080

Creep Rftr 0.622 Shorter each pair for 0.500 spacing

0.760 Metres Rise to 1 Metre Run $37^{\circ}13'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.507	0.001	0.002	1.200	1.926
0.002	0.002	1.400	1.758	0.002	0.003	1.400	2.248
0.003	0.004	1.600	2.010	0.003	0.005	1.600	2.569
0.004	0.005	1.800	2.261	0.004	0.006	1.800	2.890
0.005	0.006	2.000	2.512	0.005	0.008	2.000	3.211
0.006	0.007	2.200	2.763	0.006	0.010	2.200	3.532
0.007	0.009	2.400	3.014	0.007	0.011	2.400	3.853
0.008	0.010	2.600	3.266	0.008	0.013	2.600	4.174
0.009	0.011	2.800	3.517	0.009	0.014	2.800	4.495
0.010	0.012	3.000	3.768	0.010	0.016	3.000	4.816
0.020	0.025	3.200	4.019	0.020	0.032	3.200	5.137
0.030	0.038	3.400	4.270	0.030	0.048	3.400	5.459
0.040	0.050	3.600	4.522	0.040	0.064	3.600	5.780
0.050	0.063	3.800	4.773	0.050	0.080	3.800	6.101
0.060	0.075	4.000	5.024	0.060	0.096	4.000	6.422
0.070	0.088	4.200	5.275	0.070	0.112	4.200	6.743
0.080	0.100	4.400	5.526	0.080	0.128	4.400	7.064
0.090	0.113	4.600	5.778	0.090	0.144	4.600	7.385
0.100	0.126	4.800	6.029	0.100	0.160	4.800	7.706
0.200	0.251	5.000	6.280	0.200	0.321	5.000	8.027
0.300	0.377	5.200	6.531	0.300	0.482	5.200	8.348
0.400	0.502	5.400	6.782	0.400	0.642	5.400	8.670
0.500	0.628	5.600	7.034	0.500	0.803	5.600	8.991
0.600	0.754	5.800	7.285	0.600	0.963	5.800	9.312
0.700	0.879	6.000	7.536	0.700	1.124	6.000	9.633
0.800	1.005			0.800	1.284		
0.900	1.130			0.900	1.445		
1.000	1.256			1.000	1.605		

Pl Cut Rftr 0.100 x 0.076

Sd Cut Rftr 0.100 x 0.126

Pl Cut Hip 0.100 x 0.054

Sd Cut Hip 0.100 x 0.113

Dn Cut Pur1 0.100 x 0.060

Sd Cut Pur1 0.100 x 0.080

Creeper Rftr 0.628 Shorter each pair for 0.500 spacing

0.780 Metres Rise to 1 Metre Run 37°57'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.522	0.001	0.002	1.200	1.938
0.002	0.002	1.400	1.775	0.002	0.003	1.400	2.261
0.003	0.004	1.600	2.029	0.003	0.005	1.600	2.584
0.004	0.005	1.800	2.283	0.004	0.006	1.800	2.907
0.005	0.006	2.000	2.536	0.005	0.008	2.000	3.230
0.006	0.008	2.200	2.790	0.006	0.010	2.200	3.553
0.007	0.009	2.400	3.044	0.007	0.011	2.400	3.876
0.008	0.010	2.600	3.297	0.008	0.013	2.600	4.199
0.009	0.011	2.800	3.551	0.009	0.014	2.800	4.522
0.010	0.013	3.000	3.805	0.010	0.016	3.000	4.845
0.020	0.025	3.200	4.058	0.020	0.032	3.200	5.168
0.030	0.038	3.400	4.312	0.030	0.048	3.400	5.491
0.040	0.051	3.600	4.566	0.040	0.065	3.600	5.814
0.050	0.063	3.800	4.819	0.050	0.081	3.800	6.137
0.060	0.076	4.000	5.073	0.060	0.097	4.000	6.460
0.070	0.089	4.200	5.326	0.070	0.113	4.200	6.783
0.080	0.101	4.400	5.580	0.080	0.129	4.400	7.106
0.090	0.114	4.600	5.834	0.090	0.145	4.600	7.429
0.100	0.127	4.800	6.087	0.100	0.161	4.800	7.752
0.200	0.254	5.000	6.341	0.200	0.323	5.000	8.075
0.300	0.380	5.200	6.595	0.300	0.484	5.200	8.398
0.400	0.507	5.400	6.848	0.400	0.646	5.400	8.721
0.500	0.634	5.600	7.102	0.500	0.807	5.600	9.044
0.600	0.761	5.800	7.356	0.600	0.969	5.800	9.367
0.700	0.888	6.000	7.609	0.700	1.130	6.000	6.690
0.800	1.014			0.800	1.292		
0.900	1.141			0.900	1.453		
1.000	1.268			1.000	1.615		

Pl Cut Rftr 0.100 x 0.078

Sd Cut Rftr 0.100 x 0.127

Pl Cut Hip 0.100 x 0.055

Sd Cut Hip 0.100 x 0.113

Dn Cut Pur1 0.100 x 0.061

Sd Cut Pur1 0.100 x 0.079

Creepers Rftr 0.634 shorter each pair for 0.500 spacing

0.800 Metres Rise to 1 Metre Run 38°40'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.537	0.001	0.002	1.200	1.950
0.002	0.002	1.400	1.793	0.002	0.003	1.400	2.275
0.003	0.004	1.600	2.049	0.003	0.005	1.600	2.600
0.004	0.005	1.800	2.305	0.004	0.006	1.800	2.925
0.005	0.006	2.000	2.561	0.005	0.008	2.000	3.250
0.006	0.008	2.200	2.817	0.006	0.010	2.200	3.574
0.007	0.009	2.400	3.073	0.007	0.011	2.400	3.899
0.008	0.010	2.600	3.330	0.008	0.013	2.600	4.224
0.009	0.011	2.800	3.586	0.009	0.015	2.800	4.549
0.010	0.013	3.000	3.842	0.010	0.016	3.000	4.874
0.020	0.026	3.200	4.098	0.020	0.032	3.200	5.199
0.030	0.038	3.400	4.354	0.030	0.049	3.400	5.524
0.040	0.051	3.600	4.610	0.040	0.065	3.600	5.849
0.050	0.064	3.800	4.866	0.050	0.081	3.800	6.174
0.060	0.077	4.000	5.122	0.060	0.097	4.000	6.499
0.070	0.090	4.200	5.379	0.070	0.114	4.200	6.824
0.080	0.102	4.400	5.635	0.080	0.130	4.400	7.149
0.090	0.115	4.600	5.891	0.090	0.146	4.600	7.474
0.100	0.128	4.800	6.147	0.100	0.162	4.800	7.799
0.200	0.256	5.000	6.403	0.200	0.325	5.000	8.124
0.300	0.384	5.200	6.659	0.300	0.487	5.200	8.449
0.400	0.512	5.400	6.915	0.400	0.650	5.400	8.774
0.500	0.640	5.600	7.171	0.500	0.812	5.600	9.099
0.600	0.768	5.800	7.428	0.600	0.975	5.800	9.424
0.700	0.896	6.000	7.684	0.700	1.137	6.000	9.749
0.800	1.024			0.800	1.300		
0.900	1.152			0.900	1.462		
1.000	1.281			1.000	1.625		

Pl Cut Rftr 0.100 x 0.080

Sd Cut Rftr 0.100 x 0.128

Pl Cut Hip 0.100 x 0.057

Sd Cut Hip 0.100 x 0.115

Dn Cut Pur1 0.100 x 0.062

Sd Cut Pur1 0.100 x 0.078

Creeper Rftr 0.640 Shorter each pair for 0.500 spacing

0.820 Metres Rise to 1 Metre Run 39°21'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.552	0.001	0.002	1.200	1.962
0.002	0.003	1.400	1.810	0.002	0.003	1.400	2.289
0.003	0.004	1.600	2.069	0.003	0.005	1.600	2.615
0.004	0.005	1.800	2.328	0.004	0.006	1.800	2.942
0.005	0.006	2.000	2.586	0.005	0.008	2.000	3.269
0.006	0.008	2.200	2.845	0.006	0.010	2.200	3.596
0.007	0.009	2.400	3.104	0.007	0.011	2.400	3.923
0.008	0.010	2.600	3.362	0.008	0.013	2.600	4.250
0.009	0.012	2.800	3.621	0.009	0.015	2.800	4.577
0.010	0.013	3.000	3.880	0.010	0.016	3.000	4.904
0.020	0.026	3.200	4.138	0.020	0.033	3.200	5.231
0.030	0.039	3.400	4.397	0.030	0.049	3.400	5.558
0.040	0.052	3.600	4.655	0.040	0.065	3.600	5.885
0.050	0.065	3.800	4.914	0.050	0.082	3.800	6.212
0.060	0.077	4.000	5.173	0.060	0.098	4.000	6.539
0.070	0.090	4.200	5.431	0.070	0.114	4.200	6.866
0.080	0.103	4.400	5.690	0.080	0.131	4.400	7.193
0.090	0.116	4.600	5.949	0.090	0.147	4.600	7.520
0.100	0.129	4.800	6.207	0.100	0.163	4.800	7.847
0.200	0.259	5.000	6.466	0.200	0.327	5.000	8.174
0.300	0.388	5.200	6.725	0.300	0.490	5.200	8.501
0.400	0.517	5.400	6.983	0.400	0.654	5.400	8.828
0.500	0.647	5.600	7.242	0.500	0.817	5.600	9.154
0.600	0.776	5.800	7.501	0.600	0.981	5.800	9.481
0.700	0.905	6.000	7.759	0.700	1.144	6.000	9.808
0.800	1.034			0.800	1.308		
0.900	1.164			0.900	1.471		
1.000	1.293			1.000	1.635		

Pl Cut Rftr 0.100 x 0.082

Sd Cut Rftr 0.100 x 0.129

Pl Cut Hip 0.100 x 0.058

Sd Cut Hip 0.100 x 0.116

Dn Cut Pur1 0.100 x 0.063

Sd Cut Pur1 0.100 x 0.077

Creepers Rftr 0.647 Shorter each pair for 0.500 spacing

0.840 Metres Rise to 1 Metre Run 40°2'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.567	0.001	0.002	1.200	1.974
0.002	0.003	1.400	1.828	0.002	0.003	1.400	2.303
0.003	0.004	1.600	2.089	0.003	0.005	1.600	2.632
0.004	0.005	1.800	2.351	0.004	0.006	1.800	2.961
0.005	0.006	2.000	2.612	0.005	0.008	2.000	3.290
0.006	0.008	2.200	2.873	0.006	0.010	2.200	3.619
0.007	0.009	2.400	3.134	0.007	0.011	2.400	3.948
0.008	0.010	2.600	3.395	0.008	0.013	2.600	4.277
0.009	0.012	2.800	3.657	0.009	0.015	2.800	4.606
0.010	0.013	3.000	3.918	0.010	0.016	3.000	4.935
0.020	0.026	3.200	4.179	0.020	0.033	3.200	5.263
0.030	0.039	3.400	4.440	0.030	0.049	3.400	5.592
0.040	0.052	3.600	4.701	0.040	0.066	3.600	5.921
0.050	0.065	3.800	4.963	0.050	0.082	3.800	6.250
0.060	0.078	4.000	5.224	0.060	0.099	4.000	6.579
0.070	0.091	4.200	5.485	0.070	0.115	4.200	6.908
0.080	0.104	4.400	5.746	0.080	0.131	4.400	7.237
0.090	0.117	4.600	6.007	0.090	0.148	4.600	7.566
0.100	0.130	4.800	6.269	0.100	0.164	4.800	7.895
0.200	0.261	5.000	6.530	0.200	0.329	5.000	8.224
0.300	0.392	5.200	6.791	0.300	0.493	5.200	8.553
0.400	0.522	5.400	7.052	0.400	0.658	5.400	8.882
0.500	0.653	5.600	7.313	0.500	0.822	5.600	9.211
0.600	0.783	5.800	7.575	0.600	0.987	5.800	9.540
0.700	0.914	6.000	7.836	0.700	1.151	6.000	9.869
0.800	1.045			0.800	1.316		
0.900	1.175			0.900	1.480		
1.000	1.306			1.000	1.645		

Pl Cut Rftr 0.100 x 0.084

Sd Cut Rftr 0.100 x 0.131

Pl Cut Hip 0.100 x 0.059

Sd Cut Hip 0.100 x 0.116

Dn Cut Pur1 0.100 x 0.064

Sd Cut Pur1 0.100 x 0.076

Creepers Rftr 0.653 Shorter each pair for 0.500 spacing

0.860 Metres Rise to 1 Metre Run' 40°41'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.583	0.001	0.002	1.200	1.986
0.002	0.003	1.400	1.846	0.002	0.003	1.400	2.317
0.003	0.004	1.600	2.110	0.003	0.005	1.600	2.648
0.004	0.005	1.800	2.374	0.004	0.007	1.800	2.979
0.005	0.006	2.000	2.638	0.005	0.008	2.000	3.310
0.006	0.008	2.200	2.902	0.006	0.010	2.200	3.641
0.007	0.009	2.400	3.165	0.007	0.011	2.400	3.972
0.008	0.010	2.600	3.429	0.008	0.013	2.600	4.303
0.009	0.012	2.800	3.693	0.009	0.015	2.800	4.634
0.010	0.013	3.000	3.957	0.010	0.016	3.000	4.965
0.020	0.026	3.200	4.221	0.020	0.033	3.200	5.296
0.030	0.039	3.400	4.484	0.030	0.050	3.400	5.627
0.040	0.053	3.600	4.748	0.040	0.066	3.600	5.959
0.050	0.066	3.800	5.012	0.050	0.083	3.800	6.290
0.060	0.079	4.000	5.276	0.060	0.099	4.000	6.621
0.070	0.092	4.200	5.539	0.070	0.116	4.200	6.952
0.080	0.105	4.400	5.803	0.080	0.132	4.400	7.283
0.090	0.119	4.600	6.067	0.090	0.149	4.600	7.614
0.100	0.132	4.800	6.331	0.100	0.165	4.800	7.945
0.200	0.264	5.000	6.595	0.200	0.331	5.000	8.276
0.300	0.396	5.200	6.858	0.300	0.496	5.200	8.607
0.400	0.527	5.400	7.122	0.400	0.662	5.400	8.938
0.500	0.659	5.600	7.386	0.500	0.827	5.600	9.269
0.600	0.791	5.800	7.650	0.600	0.993	5.800	9.600
0.700	0.923	6.000	7.914	0.700	1.159	6.000	9.931
0.800	1.055			0.800	1.324		
0.900	1.187			0.900	1.490		
1.000	1.319			1.000	1.655		

Pl Cut Rftr 0.100 x 0.086

Sd Cut Rftr 0.100 x 0.132

Pl Cut Hip 0.100 x 0.061

Sd Cut Hip 0.100 x 0.117

Dn Cut Purl 0.100 x 0.065

Sd Cut Purl 0.100 x 0.076

Creep. Rftr 0.659 Shorter each pair for 0.500 spacing

0.880 Metres Rise to 1 Metre Run 41°21'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.598	0.001	0.002	1.200	1.999
0.002	0.003	1.400	1.865	0.002	0.003	1.400	2.332
0.003	0.004	1.600	2.131	0.003	0.005	1.600	2.665
0.004	0.005	1.800	2.398	0.004	0.007	1.800	2.998
0.005	0.007	2.000	2.664	0.005	0.008	2.000	3.331
0.006	0.008	2.200	2.930	0.006	0.010	2.200	3.664
0.007	0.009	2.400	3.197	0.007	0.012	2.400	3.997
0.008	0.011	2.600	3.463	0.008	0.013	2.600	4.331
0.009	0.012	2.800	3.730	0.009	0.015	2.800	4.664
0.010	0.013	3.000	3.996	0.010	0.017	3.000	4.997
0.020	0.027	3.200	4.263	0.020	0.033	3.200	5.330
0.030	0.040	3.400	4.529	0.030	0.050	3.400	5.663
0.040	0.053	3.600	4.795	0.040	0.067	3.600	5.996
0.050	0.067	3.800	5.062	0.050	0.083	3.800	6.329
0.060	0.080	4.000	5.328	0.060	0.100	4.000	6.663
0.070	0.093	4.200	5.595	0.070	0.116	4.200	6.996
0.080	0.106	4.400	5.861	0.080	0.133	4.400	7.329
0.090	0.120	4.600	6.127	0.090	0.150	4.600	7.662
0.100	0.133	4.800	6.394	0.100	0.166	4.800	7.995
0.200	0.266	5.000	6.660	0.200	0.333	5.000	8.328
0.300	0.400	5.200	6.927	0.300	0.500	5.200	8.661
0.400	0.533	5.400	7.193	0.400	0.666	5.400	8.994
0.500	0.666	5.600	7.459	0.500	0.833	5.600	9.328
0.600	0.799	5.800	7.726	0.600	0.999	5.800	9.661
0.700	0.932	6.000	7.992	0.700	1.166	6.000	9.994
0.800	1.066			0.800	1.332		
0.900	1.199			0.900	1.499		
1.000	1.332			1.000	1.666		

Pl Cut Rftr 0.100 x 0.088

Sd Cut Rftr 0.100 x 0.133

Pl Cut Hip 0.100 x 0.062

Sd Cut Hip 0.100 x 0.118

Dn Cut Pur1 0.100 x 0.066

Sd Cut Pur1 0.100 x 0.075

Creepers Rftr 0.666 Shorter each pair for 0.500 spacing

0.900 Metres Rise to 1 Metre Run $41^{\circ}59'$

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.614	0.001	0.002	1.200	2.011
0.002	0.003	1.400	1.883	0.002	0.003	1.400	2.347
0.003	0.004	1.600	2.152	0.003	0.005	1.600	2.682
0.004	0.005	1.800	2.422	0.004	0.007	1.800	3.017
0.005	0.007	2.000	2.691	0.005	0.008	2.000	3.353
0.006	0.008	2.200	2.960	0.006	0.010	2.200	3.688
0.007	0.009	2.400	3.229	0.007	0.012	2.400	4.023
0.008	0.011	2.600	3.498	0.008	0.013	2.600	4.358
0.009	0.012	2.800	3.767	0.009	0.015	2.800	4.694
0.010	0.013	3.000	4.036	0.010	0.017	3.000	5.029
0.020	0.027	3.200	4.305	0.020	0.033	3.200	5.364
0.030	0.040	3.400	4.574	0.030	0.050	3.400	5.699
0.040	0.054	3.600	4.843	0.040	0.067	3.600	6.035
0.050	0.067	3.800	5.112	0.050	0.084	3.800	6.370
0.060	0.081	4.000	5.381	0.060	0.100	4.000	6.705
0.070	0.094	4.200	5.650	0.070	0.117	4.200	7.040
0.080	0.108	4.400	5.919	0.080	0.134	4.400	7.376
0.090	0.121	4.600	6.189	0.090	0.151	4.600	7.711
0.100	0.134	4.800	6.458	0.100	0.168	4.800	8.046
0.200	0.269	5.000	6.727	0.200	0.335	5.000	8.381
0.300	0.404	5.200	6.996	0.300	0.503	5.200	8.717
0.400	0.538	5.400	7.265	0.400	0.670	5.400	9.052
0.500	0.673	5.600	7.534	0.500	0.838	5.600	9.387
0.600	0.807	5.800	7.803	0.600	1.006	5.800	9.722
0.700	0.942	6.000	8.072	0.700	1.173	6.000	10.058
0.800	1.076			0.800	1.341		
0.900	1.211			0.900	1.509		
1.000	1.345			1.000	1.676		

Pl Cut Rftr 0.100 x 0.090

Sd Cut Rftr 0.100 x 0.134

Pl Cut Hip 0.100 x 0.064

Sd Cut Hip 0.100 x 0.118

Dn Cut Pur1 0.100 x 0.067

Sd Cut Pur1 0.100 x 0.074

Creepers Rftr 0.673 Shorter each pair for 0.500 spacing

0.920 Metres Rise to 1 Metres Run 42°37'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.630	0.001	0.002	1.200	2.024
0.002	0.003	1.400	1.902	0.002	0.003	1.400	2.362
0.003	0.004	1.600	2.174	0.003	0.005	1.600	2.699
0.004	0.005	1.800	2.446	0.004	0.007	1.800	3.037
0.005	0.007	2.000	2.718	0.005	0.008	2.000	3.374
0.006	0.008	2.200	2.989	0.006	0.010	2.200	3.712
0.007	0.009	2.400	3.261	0.007	0.012	2.400	4.049
0.008	0.011	2.600	3.533	0.008	0.013	2.600	4.386
0.009	0.012	2.800	3.805	0.009	0.015	2.800	4.724
0.010	0.013	3.000	4.076	0.010	0.017	3.000	5.061
0.020	0.027	3.200	4.348	0.020	0.034	3.200	5.399
0.030	0.041	3.400	4.620	0.030	0.051	3.400	5.736
0.040	0.054	3.600	4.892	0.040	0.067	3.600	6.074
0.050	0.068	3.800	5.163	0.050	0.084	3.800	6.411
0.060	0.081	4.000	5.435	0.060	0.101	4.000	6.748
0.070	0.095	4.200	5.707	0.070	0.118	4.200	7.086
0.080	0.109	4.400	5.979	0.080	0.135	4.400	7.423
0.090	0.122	4.600	6.250	0.090	0.152	4.600	7.761
0.100	0.136	4.800	6.522	0.100	0.169	4.800	8.098
0.200	0.272	5.000	6.794	0.200	0.337	5.000	8.436
0.300	0.408	5.200	7.066	0.300	0.506	5.200	8.773
0.400	0.543	5.400	7.338	0.400	0.675	5.400	9.110
0.500	0.679	5.600	7.609	0.500	0.843	5.600	9.448
0.600	0.815	5.800	7.881	0.600	1.012	5.800	9.785
0.700	0.951	6.000	8.153	0.700	1.181	6.000	10.123
0.800	1.087			0.800	1.350		
0.900	1.223			0.900	1.518		
1.000	1.359			1.000	1.687		

Pl Cut Rftr 0.100 x 0.092 Sd Cut Rftr 0.100 x 0.136
 Pl Cut Hip 0.100 x 0.065 Sd Cut Hip 0.100 x 0.119
 Dn Cut Pur1 0.100 x 0.068 Sd Cut Pur1 0.100 x 0.073

Creeper Rftr 0.679 Shorter each pair for 0.500 spacing

0.940 Metres Rise to 1 Metre Run 43°14'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.647	0.001	0.002	1.200	2.038
0.002	0.003	1.400	1.921	0.002	0.003	1.400	2.377
0.003	0.004	1.600	2.196	0.003	0.005	1.600	2.717
0.004	0.005	1.800	2.470	0.004	0.007	1.800	3.057
0.005	0.007	2.000	2.745	0.005	0.008	2.000	3.396
0.006	0.008	2.200	3.019	0.006	0.010	2.200	3.736
0.007	0.010	2.400	3.294	0.007	0.012	2.400	4.075
0.008	0.011	2.600	3.568	0.008	0.013	2.600	4.415
0.009	0.012	2.800	3.843	0.009	0.015	2.800	4.755
0.010	0.014	3.000	4.117	0.010	0.017	3.000	5.094
0.020	0.027	3.200	4.392	0.020	0.034	3.200	5.434
0.030	0.041	3.400	4.666	0.030	0.051	3.400	5.773
0.040	0.055	3.600	4.941	0.040	0.068	3.600	6.113
0.050	0.069	3.800	5.215	0.050	0.085	3.800	6.453
0.060	0.082	4.000	5.490	0.060	0.102	4.000	6.792
0.070	0.096	4.200	5.764	0.070	0.119	4.200	7.132
0.080	0.110	4.400	6.039	0.080	0.136	4.400	7.472
0.090	0.123	4.600	6.313	0.090	0.153	4.600	7.811
0.100	0.137	4.800	6.588	0.100	0.170	4.800	8.151
0.200	0.274	5.000	6.862	0.200	0.340	5.000	8.490
0.300	0.412	5.200	7.137	0.300	0.509	5.200	8.830
0.400	0.549	5.400	7.411	0.400	0.679	5.400	9.170
0.500	0.686	5.600	7.686	0.500	0.849	5.600	9.509
0.600	0.823	5.800	7.960	0.600	1.019	5.800	9.849
0.700	0.961	6.000	8.235	0.700	1.189	6.000	10.189
0.800	1.098			0.800	1.358		
0.900	1.235			0.900	1.528		
1.000	1.372			1.000	1.698		

Pl Cut Rftr 0.100 x 0.094 Sd Cut Rftr 0.100 x 0.137

Pl Cut Hip 0.100 x 0.066 Sd Cut Hip 0.100 x 0.120

Dn Cut Purl 0.100 x 0.068 Sd Cut Purl 0.100 x 0.073

Creeper Rftr 0.686 shorter each pair for 0.500 spacing

0.960 Metres Rise to 1 Metre Run 43°50'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.663	0.001	0.002	1.200	2.051
0.002	0.003	1.400	1.941	0.002	0.003	1.400	2.393
0.003	0.004	1.600	2.218	0.003	0.005	1.600	2.735
0.004	0.005	1.800	2.495	0.004	0.007	1.800	3.077
0.005	0.007	2.000	2.772	0.005	0.008	2.000	3.418
0.006	0.008	2.200	3.050	0.006	0.010	2.200	3.760
0.007	0.010	2.400	3.327	0.007	0.012	2.400	4.102
0.008	0.011	2.600	3.604	0.008	0.014	2.600	4.444
0.009	0.012	2.800	3.881	0.009	0.015	2.800	4.786
0.010	0.014	3.000	4.159	0.010	0.017	3.000	5.128
0.020	0.028	3.200	4.436	0.020	0.034	3.200	5.470
0.030	0.041	3.400	4.713	0.030	0.051	3.400	5.811
0.040	0.055	3.600	4.990	0.040	0.068	3.600	6.153
0.050	0.069	3.800	5.268	0.050	0.085	3.800	6.495
0.060	0.083	4.000	5.545	0.060	0.102	4.000	6.837
0.070	0.097	4.200	5.822	0.070	0.120	4.200	7.179
0.080	0.111	4.400	6.099	0.080	0.137	4.400	7.521
0.090	0.125	4.600	6.376	0.090	0.154	4.600	7.863
0.100	0.139	4.800	6.654	0.100	0.171	4.800	8.204
0.200	0.277	5.000	6.931	0.200	0.342	5.000	8.546
0.300	0.416	5.200	7.208	0.300	0.513	5.200	8.888
0.400	0.554	5.400	7.485	0.400	0.684	5.400	9.230
0.500	0.693	5.600	7.763	0.500	0.855	5.600	9.572
0.600	0.832	5.800	8.040	0.600	1.025	5.800	9.914
0.700	0.970	6.000	8.317	0.700	1.196	6.000	10.256
0.800	1.109			0.800	1.367		
0.900	1.247			0.900	1.538		
1.000	1.386			1.000	1.709		

Pl Cut Rftr 0.100 x 0.096

Pl Cut Hip 0.100 x 0.068

Dn Cut Pur1 0.100 x 0.069

Sd Cut Rftr 0.100 x 0.139

Sd Cut Hip 0.100 x 0.121

Sd Cut Pur1 0.100 x 0.072

Creeper Rftr 0.693 Shorter each pair for 0.500 Spacing

0.980 Metres Rise to 1 Metre Run

44° 25'

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.680	0.001	0.002	1.200	2.065
0.002	0.003	1.400	1.960	0.002	0.003	1.400	2.409
0.003	0.004	1.600	2.240	0.003	0.005	1.600	2.753
0.004	0.006	1.800	2.520	0.004	0.007	1.800	3.097
0.005	0.007	2.000	2.800	0.005	0.009	2.000	3.441
0.006	0.008	2.200	3.080	0.006	0.010	2.200	3.785
0.007	0.010	2.400	3.360	0.007	0.012	2.400	4.129
0.008	0.011	2.600	3.640	0.008	0.014	2.600	4.473
0.009	0.013	2.800	3.920	0.009	0.015	2.800	4.818
0.010	0.014	3.000	4.200	0.010	0.017	3.000	5.162
0.020	0.028	3.200	4.480	0.020	0.034	3.200	5.506
0.030	0.042	3.400	4.760	0.030	0.052	3.400	5.850
0.040	0.056	3.600	5.040	0.040	0.069	3.600	6.194
0.050	0.070	3.800	5.320	0.050	0.086	3.800	6.538
0.060	0.084	4.000	5.600	0.060	0.103	4.000	6.882
0.070	0.098	4.200	5.880	0.070	0.120	4.200	7.226
0.080	0.112	4.400	6.161	0.080	0.138	4.400	7.570
0.090	0.126	4.600	6.441	0.090	0.155	4.600	7.915
0.100	0.140	4.800	6.721	0.100	0.172	4.800	8.259
0.200	0.280	5.000	7.001	0.200	0.344	5.000	8.603
0.300	0.420	5.200	7.281	0.300	0.516	5.200	8.947
0.400	0.560	5.400	7.561	0.400	0.688	5.400	9.291
0.500	0.700	5.600	7.841	0.500	0.860	5.600	9.635
0.600	0.840	5.800	8.121	0.600	1.032	5.800	9.979
0.700	0.980	6.000	8.401	0.700	1.204	6.000	10.323
0.800	1.120			0.800	1.376		
0.900	1.260			0.900	1.548		
1.000	1.400			1.000	1.720		

Pl Cut Rftr 0.100 x 0.098

Sd Cut Rftr 0.100 x 0.140

Pl Cut Hip 0.100 x 0.069

Sd Cut Hip 0.100 x 0.122

Dn Cut Pur1 0.100 x 0.070

Sd Cut Pur1 0.100 x 0.071

Creeper Rftr 0.700 Shorter each pair for 0.500 Spacing

1 Metre Rise to 1 Metre Run

45°

Rafter Lengths				Hip and Valley Lengths			
Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres	Half Span Metres	Metres
0.001	0.001	1.200	1.697	0.001	0.002	1.200	2.078
0.002	0.003	1.400	1.980	0.002	0.003	1.400	2.425
0.003	0.004	1.600	2.263	0.003	0.005	1.600	2.771
0.004	0.006	1.800	2.546	0.004	0.007	1.800	3.118
0.005	0.007	2.000	2.828	0.005	0.009	2.000	3.464
0.006	0.008	2.200	3.111	0.006	0.010	2.200	3.810
0.007	0.010	2.400	3.394	0.007	0.012	2.400	4.157
0.008	0.011	2.600	3.677	0.008	0.014	2.600	4.503
0.009	0.013	2.800	3.960	0.009	0.015	2.800	4.850
0.010	0.014	3.000	4.243	0.010	0.017	3.000	5.196
0.020	0.028	3.200	4.525	0.020	0.035	3.200	5.542
0.030	0.042	3.400	4.808	0.030	0.052	3.400	5.889
0.040	0.056	3.600	5.091	0.040	0.069	3.600	6.235
0.050	0.071	3.800	5.374	0.050	0.087	3.800	6.582
0.060	0.085	4.000	5.657	0.060	0.104	4.000	6.928
0.070	0.099	4.200	5.940	0.070	0.121	4.200	7.275
0.080	0.113	4.400	6.223	0.080	0.138	4.400	7.621
0.090	0.127	4.600	6.505	0.090	0.156	4.600	7.967
0.100	0.141	4.800	6.788	0.100	0.173	4.800	8.314
0.200	0.283	5.000	7.071	0.200	0.346	5.000	8.660
0.300	0.424	5.200	7.354	0.300	0.520	5.200	9.007
0.400	0.566	5.400	7.637	0.400	0.693	5.400	9.353
0.500	0.707	5.600	7.920	0.500	0.866	5.600	9.699
0.600	0.848	5.800	8.203	0.600	1.039	5.800	10.046
0.700	0.990	6.000	8.485	0.700	1.212	6.000	10.392
0.800	1.131			0.800	1.386		
0.900	1.273			0.900	1.559		
1.000	1.414			1.000	1.732		

Pl Cut Rftr 0.100 x 0.100

Sd Cut Rftr 0.100 x 0.141

Pl Cut Hip 0.100 x 0.071

Sd Cut Hip 0.100 x 0.122

Dn Cut Purl 0.100 x 0.071

Sd Cut Purl 0.100 x 0.071

Creeper Rftr 0.707 Shorter each pair for 0.500 spacing

NOTES

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