



THE  
ORIGINAL  
**SWANSON**  
SPEED<sup>®</sup> SQUARES

# THE SWANSON SPEED<sup>®</sup> SQUARE

SWANSON'S  
"BLUE BOOK"  
OF  
RAFTER LENGTHS  
&  
ROOF CONSTRUCTION  
USING  
THE "ONE-NUMBER" METHOD<sup>™</sup>

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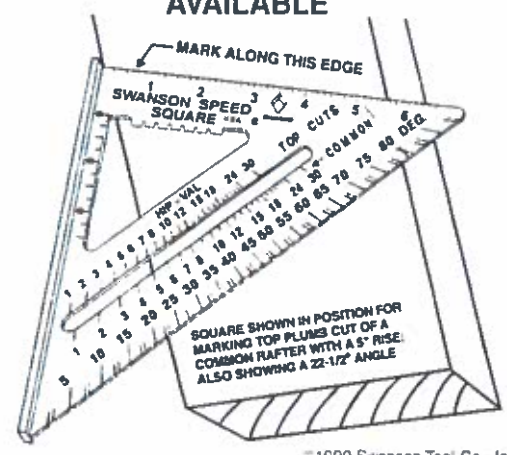


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# CONGRATULATIONS ! YOU NOW OWN THE BEST AND SIMPLEST SQUARE AVAILABLE



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ENLARGED SECTION OF DEGREE SCALE



Note: Each heavy black line is 1" wide.  
Each space is 2" wide.

THE SCALE 0-90 DEGREES ACROSS BOTTOM LEG OF SQUARE ALLOWS USER TO MARK AND MEASURE HIS WORK IN DEGREES. THE LONG LINES WITH A HEAVY BLOCK LINE BETWEEN MAKES IT MUCH EASIER FOR THE EYE TO PICK OUT A LOCATION ON THE SCALE.

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## THE "ONE-NUMBER"™ METHOD" HELPING WORKMEN MAKE CORRECT ANGLE CUTS FOR ANY PITCHED ROOF

The "ONE-NUMBER"™ METHOD" developed by the Swanson Tool Co. simplifies roof framing to where roofs are really framed as "easily" as your studdings or joists."

Following is a brief description of the various rafters, how to get the different cuts, where to measure from, what is meant by "run" and "rise," information about the hip and valley rafter, etc.

This book has been rewritten with the use of more pictures in the hope it will be of greater benefit to those who are not as familiar with roof construction as the tradesman. Good planning will save time and material.

### NOW WITH FULL 90 DEGREE SCALE

The square has been redesigned with the addition of a full 90 degree scale, which will enable the user to mark any angle in degrees, as well as all the angles represented in "inch rise per foot run." You can easily convert degrees to inch rise or vice versa at a glance. The square makes an excellent guide for the electric saw to run against and is very handy for trim work.

**COMMON RAFTER:** One running at right angles (90°) from plate to ridge. The common rafter will form the diagonal leg (hypotenuse) of a 90° triangle, with the rise and run forming the 90° angle of the triangle (Fig. 1).

Fig. 1 also shows correct points from which to measure. Study them and remember the picture when you are on the job. Where the arrows show | Rafter Length |, these are the lines to measure from. When your lumber is not straight, always put the crown or high side up when laying out *any* rafter. When laying out rafter as shown in Fig. 1 (lets assume 5" rise), start at top end of rafter. Lay square on face of rafter, with "T" bar of square down over the edge of rafter. Pivot square to where number 5 on common scale lines up with same edge of rafter as pivot point. Keep pivot point tight against edge of rafter. Start your mark at pivot point, marking along top edge of square. See drawing in front of book. This gives the *top plumb cut*, to fit against ridge.

*Measure the rafter length* along top edge of rafter. Mark another plumb cut same as above. This line represents outside wall of the building. (The same point from which you measured the width of the building). Add whatever length you want for a tail or eave to the rafter lengths given in the table in back of book. Mark at end of tail on rafter is plumb cut, same as one at top end of rafter (Fig. 1). The tails of the rafters may be cut on

the ground, or wait until rafters are all in place and mark the ends to a line and cut—whatever is the easiest. To get the Bottom or Heel cut see Fig. 2a or Fig. 2b.

**VALLEY RAFTER:** One running diagonally from the plate to the ridge at the intersection of gable extension with main roof (Fig. 7).

**HIP RAFTER:** One running diagonally from the plate to the ridge (Fig. 7).

Since both hip and valley rafters run at a 45° angle to the common rafter, they both represent the diagonal or hypotenuse of a right triangle; the three sides being the hip, plate and common rafter, or the valley, ridge and common rafter. Therefore, the cuts and lengths apply equally to hip and valley rafters (Fig. 3).

You will notice the square has a separate Hip-Val Scale which must be used for either of these two rafters. But *always* use the *same number* on Hip-Val scale as you used on the common rafter scale—the number representing *inch rise*. The reason for the separate Hip-Val scale is that the hip and valley rafters run at 45° to the common rafter, and therefore must be longer. In Fig. 3, the hip rafter has a horizontal run of 17" to rise 12", while the common rafter rises 12" in only 12" of horizontal run. This requires a different angle for the plumb cuts. In Fig. 4, square is held on rafter and pivoted in the same manner as with a common rafter, but using the Hip-Val scale. If building is out of square, one

hip will be cut a little shorter, depending on how great the error is. Keep longer corner at top end of hip up even with top of ridge. Keep ridge and hips well propped up until roof boards are nailed. Watch that you don't put a bow in ridge or hip while nailing other rafters to them.

*To find intersection points of center of hips on ridge, leave ridge about a foot too long at point where both hips intersect the ridge. Take a regular length common rafter (such as used on main roof). Set bottom cut over edge of plate and in line with ridge. Make sure your walls are straight. Place top end of common rafter along side of the ridge, bringing top point of common even with top of ridge (Fig. 5). Mark across top of ridge at this point. This mark is the center line of the two intersecting hips. The common rafter used to get this intersection point would be placed in the same position as the one in Fig. 7 that comes in line with the ridge and runs underneath the little dormer on the 20'0" wall side. This way you know the rise of the hips will be the same as the rise of the common rafter on main roof. Leave the bottom ends of the hips (eave end) a little short so they will not interfere with lining up the fascia boards at the corner.*

**JACK RAFTERS:** One which does not extend from plate to ridge. *Hip Jack* — one running from plate to hip at 90° to plate. *Valley Jack* — one running from ridge to valley at 90° to ridge. *Cripple Jack* — one which neither touches the ridge nor plate, but runs from a hip rafter to a valley rafter at 90° to the ridge (Fig. 7).

The rise and run of a jack rafter are the same as that of a *common* rafter. When marking jacks use the *common* rafter scale and same number (inch rise). Where rafter rests against hip or valley, mark plumb cut, then cut at 45° angle along this mark. This will give both plumb cut and side cut (Fig. 4). When resting on ridge or plate, lay out the same as for the common rafters. For cripple jacks, mark plumb cuts on both ends and saw at 45° as above.

When measuring the length of the jack rafter, measure from longest corner (plumb cut on 45°) to other plumb cut mark, along *Top Side* (same as shown in Fig. 4 for hip rafter). Cripples are measured from long point to long point diagonally along top edge. Measuring to the long point (Fig. 4) will compensate for ½ of the ridge thickness (or for jacks, ½ of valley or hip thickness). There is no problem in laying out these angles on the rafters as long as you keep in mind which side of the hip (or whatever) you want the rafter to fit against. Usually a carpenter will space the ceiling joist from an outside wall and working to a 48" center. This gives proper spacing for dry wall or panelling or whatever is used. Proper spacing of ceiling joist will aid in roof construction. Measure shortest jack first (usually running next to a ceiling joist), from plate to hip rafter. The difference in length of the rest of the jacks is taken from chart. Set each rafter along side ceiling joist and spike well. The ceiling joist then ties the roof together.

Figure the rafter material lengths so you can cut a long and short jack rafter from each piece. When you have cut your shortest jack, the angle of the long end will then fit on the other side of the hip. Do this all the way up the hip, always leaving the cut off end for the other side. If lumber has crown in it, put crown *up* on *longest* cut off piece.

In some cases a carpenter will build the valley on top of the main roof, not using a valley rafter. This of course would be the easiest way on any remodeling job, room addition, etc. It saves cutting into and weakening the main roof. Mark location of valley on roof boards, 45° to common rafters (See Dormer, Fig. 7). Set long point of bottom end of rafter even with this line ("G" of Fig. 7). The top cut of the rafter is the same as top cut of common. Bottom end is a horizontal cut, same as Bottom or Heel cut that fits on top of plate, and is marked in same way, but extends all the way across rafter (Fig. 2a or Fig. 2b). Then tilt the base of your saw to the *same angle* as the roof on which the bottom end of the rafter will rest. I.E., if rafter end is to fit on a roof with 6" rise, you would tilt the base of saw to an angle of 26½° (6" rise) and cut along horizontal line. With saw set at this angle you will see that it fits over the pointed end of top of common rafter, because this would also be a 26½° (6" rise) angle. Save the cut off ends for the other side.

Fig. 7 shows a roof as is sometimes used over a door. See "H." To get the pointed end cut, the Square is held in position for the plumb cut of the *flat* roof. Then a line running from the pivot corner of the Square thru the number representing the rise of the Main Roof is the cut wanted.

### PLYWOOD ROOF SHEATHING

When using plywood for a roof sheathing it is best to do the angle cutting on the horses as follows: from the far left hand corner of a 4 x 8 foot sheet, measure to the right the distance given for the pitch wanted (measurements given in following chart). From this point draw a line back to the near left hand corner. These measurements are for a perfectly square roof. Better check the first piece cut for any changes required.

For roofs of 6" pitch or steeper, the bevel can be cut with an electric saw that tilts to 45°. For a flatter pitched roof it is best to leave the saw set at 90° and use a valley strip made as follows: Scribe a line ¼" from the right hand edge of a 2" piece. With the saw tilted, rip at this line. The strip should be the thickness of the roof boards at the thick edge.

#### Inch Rise per foot run

#### Measure from corner of Plywood

2"	3' 11 3/8"
2 1/2"	3' 11"
3"	3' 10 5/8"
3 1/2"	3' 10 1/8"
4"	3' 9 3/4"
4 1/2"	3' 9"
5"	3' 8 3/8"
5 1/2"	3' 7 3/8"
6"	3' 6 7/8"
7"	3' 5 3/8"
8"	3' 3 7/8"
9"	3' 2 3/8"
10"	3' 7/8"
11"	2' 11 3/8"
12"	2' 9 7/8"

## FOR UNEVEN PITCHED ROOFS

If your roof has no hips or valleys and you have more than one pitch, cut each section separately using the number representing the pitch of that section.

For instance, if the front section is 8" rise and 12' run, you would use number 8 and find your rafter lengths under 24' width. Then we'll say the rear is 3" rise and 16' run. Use number 3 on the Square, and 32' building width for your length. The top cut to fit against the ridge is plumb for both sections. Your rear plate would be 4' higher.

## DETERMINING THE RISE OF A ROOF

Assume your building has an 18' wide span and you want an 8' rise. Expressed as an equation:

$$\text{Inch rise per foot run} = \frac{\text{Rise} \times 12}{\text{Run}}$$

The rise here is 8' and the run is 9' (1/2 of span) so:

$$\frac{8 \times 12}{9} = \frac{96}{9} \text{ or } 10\frac{2}{3} \text{ rise.}$$

Round this off to the closest inch (in this case 11"), which will increase the rise by 1/3" x 9' by 3" for this building. Now you can look in rafter table under 18' building width and 11" rise and your rafter is 12' 2 1/2". This does not include overhang. If exact length is needed see Fig. 1. (Also Page 12, Note.)

A "Full" pitch roof is one having a 24" rise for 12" run. Following is a Table of various pitches. Pitch equals rise divided by span; being the proportion the rise bears to the span.

Inch Run	Inch Rise	Pitch	
12"	22	11/12	
12"	20	5/6	
12"	18	3/4	
12"	16	2/3	
12"	14	7/12	
12"	12	1/2	— meaning roof
12"	10	5/12	rises a distance
12"	8	1/3	equal to 1/2 of
12"	6	1/4	building width.
12"	4	1/6	
12"	2	1/12	

## USING THE RAFTER LENGTH TABLES

In the following pages are tables giving the lengths of any common, hip or valley rafter for any pitch up to a 24" rise, and for building widths up to 40 feet. (See Page 12.)

Fig. 7 gives one example of the use of these tables. The main building is 20' wide x 30' long with a 7" rise. Thus, the hip rafters are 15' 3 5/8" long, and the common rafters 11' 7". The 15' x 15' addition, hips and valleys are 11' 5 5/8" long and the commons 8' 8 3/8". For the 10' Gable Dormer on top of the roof boards, the longest rafters are 5' 9 1/2".

A "width in inches" table is found in back of book which gives the amount to add for inches in case the width does not measure out in even feet. Simply add the length given for the inches in relation to the rise, to the length given for the even foot tables. Lengths given do not include eave projection.

It is best to use a steel tape in measuring the width of building, measuring from outside to outside of plate upon which rafters will rest, or if boarding extends to top of plate measure to outside of boards. *If a ridge board is used, deduct the thickness of same from building width.*

For building widths greater than is given in this book, take any two widths which when added together equal the width wanted. Find the lengths for these two widths and add them together; for instance for 49' width take width of 20 and 29 and add together.

NOTE: Lengths of rafters for pitches  $2\frac{1}{2}$ ,  $3\frac{1}{2}$ ,  $4\frac{1}{2}$ ,  $5\frac{1}{2}$ : Use lower pitch then add  $\frac{1}{2}$  of difference to next higher pitch.

### THE DEGREE SCALE

The same pivoting method used to determine rafter cuts is used with the degree scale. By remembering that the square forms a  $45^\circ$  right triangle, it can be used to measure any angle with the use of the degree scale.

A study of the following diagrams will show the principals used. These principals can be applied in different ways to meet various problems.

To mark degrees on a flat surface see Figs. 8 and 9.

To find degrees in an upright or vertical position, Fig. 10 shows two methods by which a plumb line can be used on the square. Fig. 11 gives illustrations of the use of a plumb line on the square.

*Fig. 11A* — With plumb line AB set on  $45^\circ$  mark, the square is now positioned so that the bottom (long side) of square is running level,  $90^\circ$  to plumb line.

*Fig. 11B* — By swinging the square up against line XY, the plumb line has shifted  $15^\circ$ . Thus the unknown angle in 11A was  $15^\circ$ , with angle  $ABX = 60^\circ$ . This same  $15^\circ$  reading also indicates bottom edge of square is setting at a  $15^\circ$  incline.

In looking at Fig. 11A and B, it is possible that sometimes the plumb line will not fall from pivot point to a point on the degree scale due to the position of line XY. In this case, rather than setting the *edge* of the square to line XY, simply turn the square over and let line XY run *behind* the square. Line XY will then run from pivot point to some point on the degree scale; such as shown in Fig. 11C. Now set plumb line AB on square. The number of degrees on scale between plumb line and angle line indicates measured angle.



## RAFTER LENGTHS PER FOOT RUN

Seldom does the roof on a house have greater than a 1/2 pitch, which is a 12" rise per foot run. For a steeper roof, a table is provided which gives any rise from 1" to 24". The figures given are the length *per foot run* of any given rise. (See table on page 15.) I.E., assume the roof has a 22" rise per foot run. With a 22" rise, the *length per foot run* of a common rafter is 25.06 inches. Assume building is 50' wide. The run of the common would be 25' (1/2 of width), 25 x 25.06 = 626.50 inches. Divide by 12 and you have 52.208 feet or 52'-2 1/2" (.21 x 12 gives you the 2 1/2"). Deduct 1/2 thickness of ridge from this length.

Hip or Valley rafter would be figured the same way.

## Length of Rafter per Foot Run (In Inches)

Angle in Deg.	Rise	P I T C H	(Fig. 8) Tail Cut loss "A"	Common Rafters	Hip-Val Rafters
4 1/4	1			12.04"	17.00"
9 1/2	2	1/12		12.16"	17.09"
14	3			12.37"	17.23"
18 1/2	4	1/6	2 3/4"	12.65"	17.44"
22 1/2	5			13.00"	17.69"
26 1/2	6	1/4	4"	13.42"	18.00"
30 1/4	7			13.89"	18.36"
33 3/4	8	1/3		14.42"	18.76"
37	9		6"	15.00"	19.21"
39 3/4	10	5/12		15.62"	19.70"
42 1/2	11			16.28"	20.22"
45	12	1/2	8"	16.97"	20.78"
47 1/4	13			17.69"	21.38"
49 1/2	14	7/12		18.44"	22.00"
51 1/4	15		10"	19.21"	22.65"
53	16	2/3		20.00"	23.32"
54 3/4	17			20.81"	24.02"
56 1/4	18	3/4	12"	21.63"	24.74"
57 1/4	19			22.47"	25.47"
59	20	5/6		23.32"	26.23"
60 1/4	21		14"	24.19"	27.00"
61 1/2	22	11/12		25.06"	27.78"
62 1/2	23			25.94"	28.58"
63 1/2	24	Full	16"	26.83"	29.39"
64 1/2	25			27.73"	30.22"
65 1/4	26			28.64"	31.05"
66	27		18"	29.55"	31.89"
66 1/4	28			30.46"	32.74"
67 1/2	29			31.38"	33.60"
68 1/4	30		20"	32.31"	34.47"

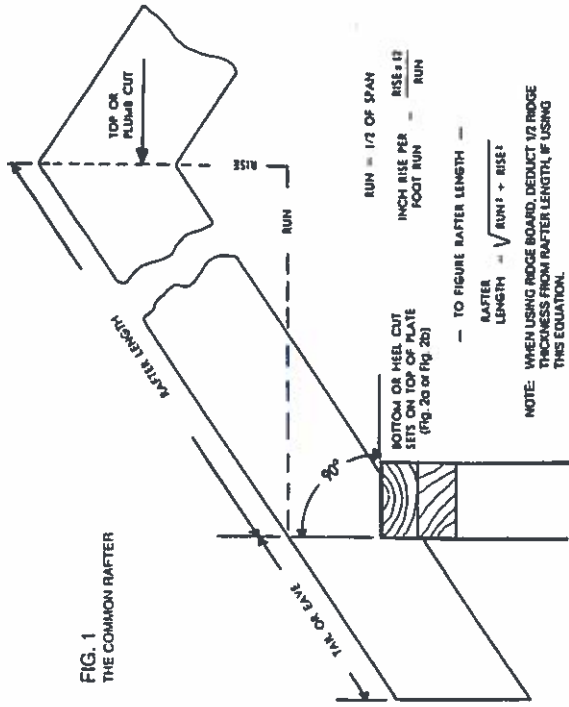


FIG. 1  
THE COMMON RAFTER

$RUN = 1/2 \text{ OF SPAN}$   
 $\text{INCH RISE PER FOOT RUN} = \frac{\text{RISE} \times 12}{\text{RUN}}$   
 $\text{--- TO FIGURE RAFTER LENGTH ---}$   
 $\text{RAFTER LENGTH} = \sqrt{\text{RUN}^2 + \text{RISE}^2}$

NOTE: WHEN USING RIDGE BOARD, DEDUCT 1/2 RIDGE THICKNESS FROM RAFTER LENGTH, IF USING THIS EQUATION.

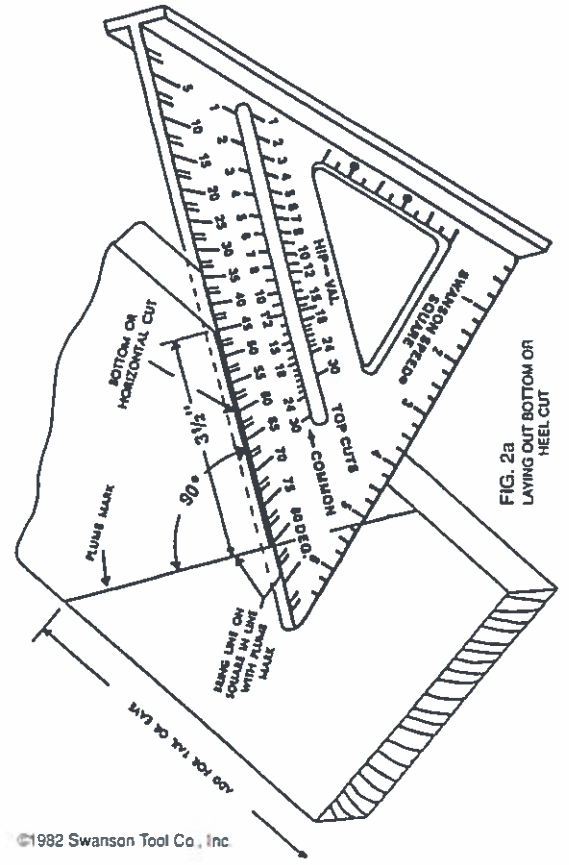


FIG. 2a  
LAYING OUT BOTTOM OR HEEL CUT

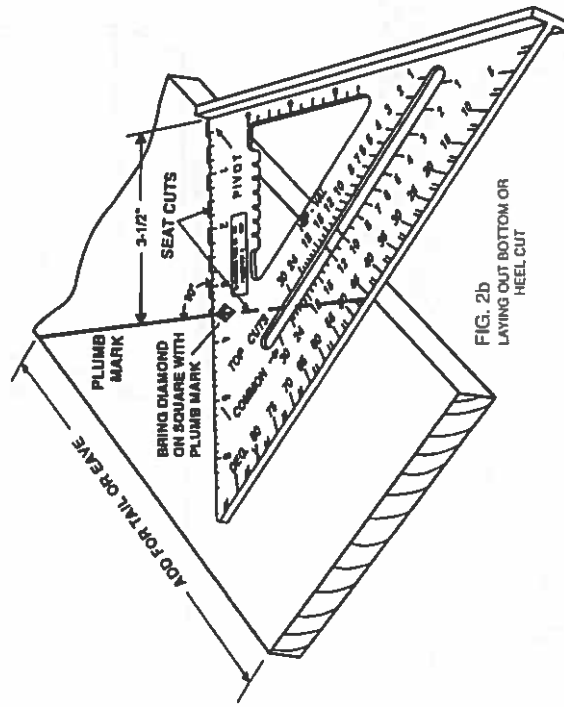


FIG. 2b  
LAYING OUT BOTTOM OR  
HEEL CUT

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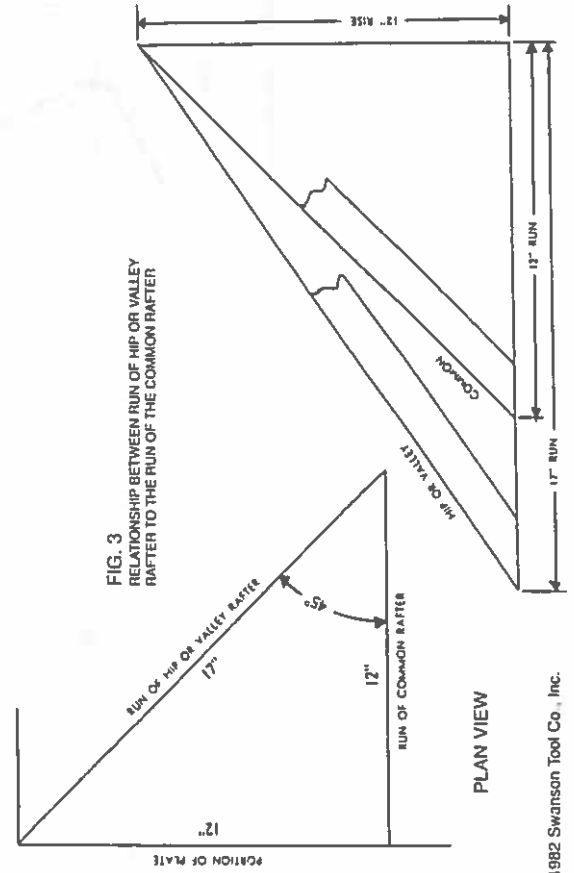
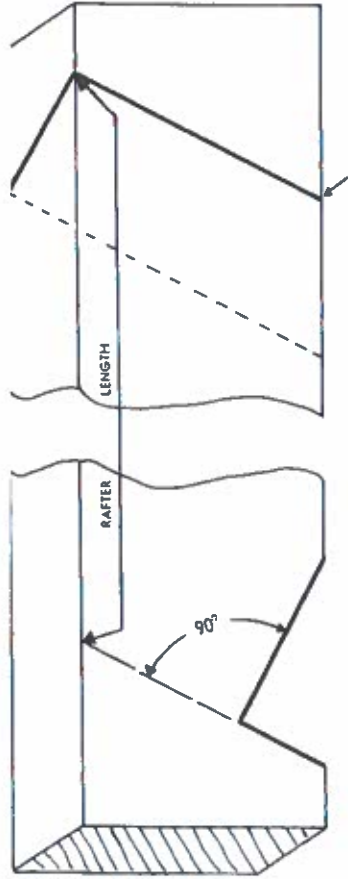


FIG. 3  
RELATIONSHIP BETWEEN RUN OF HIP OR VALLEY  
RAFTER TO THE RUN OF THE COMMON RAFTER.

PLAN VIEW

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FIG. 4  
LAYING OUT HIP OR VALLEY RAFTER



BOTTOM CUT MARK PLUMB CUT, THEN BOTTOM CUT AT RIGHT ANGLE TO PLUMB CUT, USE HIP-VAL SCALE. (Fig. 2a or Fig. 2b)

PLUMB CUT MARKED FROM HIP-VAL SCALE. USE SAME NUMBER AS USED ON COMMON NUMBER REPRESENTING INCH RISE PER FOOT RUN - TILT SAW TO 45° AND CUT ALONG PLUMB MARK. THIS WILL GIVE BOTH PLUMB AND SIDE CUT WITH ONE SAWING OPERATION.

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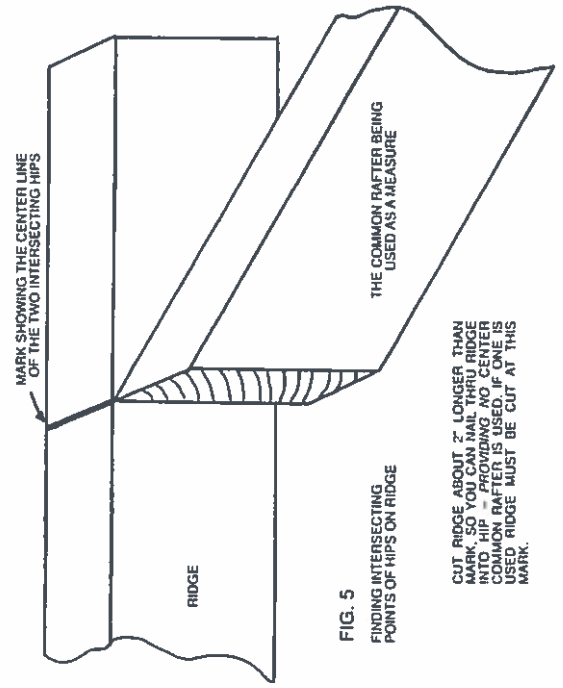
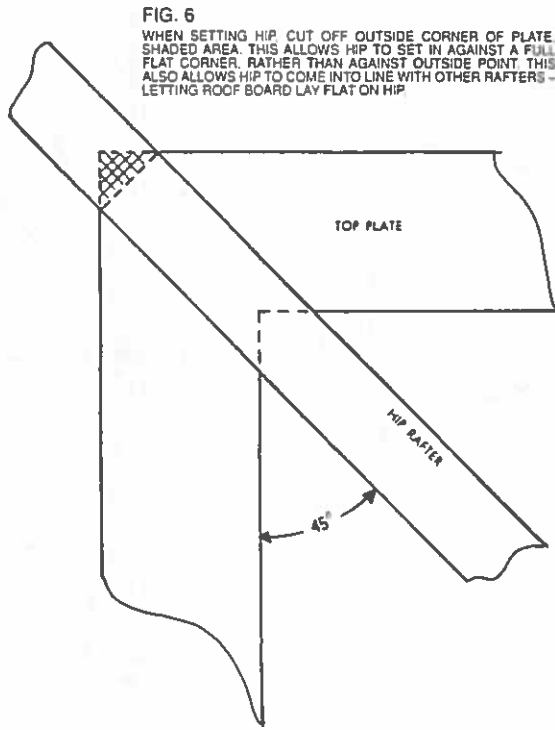


FIG. 5  
FINDING INTERSECTING POINTS OF HIPs ON RIDGE

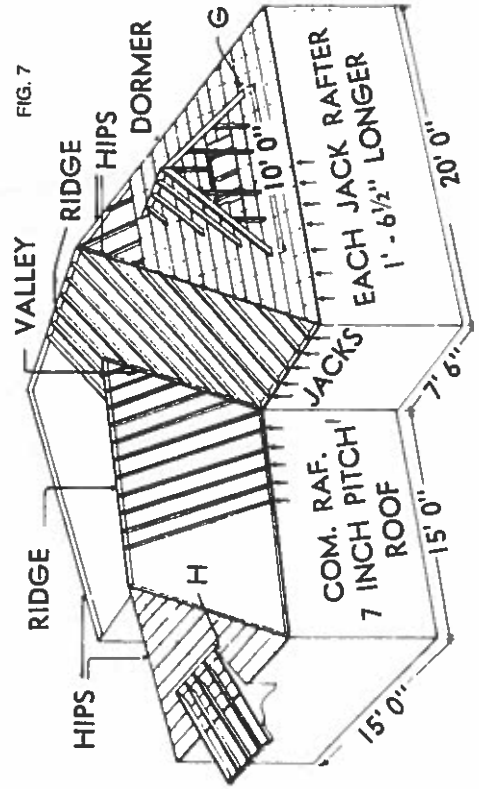
CUT RIDGE ABOUT 2" LONGER THAN MARK, SO YOU CAN NAIL THRU RIDGE INTO COMMON RAFTER. COMMON RAFTER IS USED IF ONE IS USED. RIDGE MUST BE CUT AT THIS MARK.

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ALL CUTS ON THIS ROOF MADE BY USING THE NUMBER 7 (INCH RISE)

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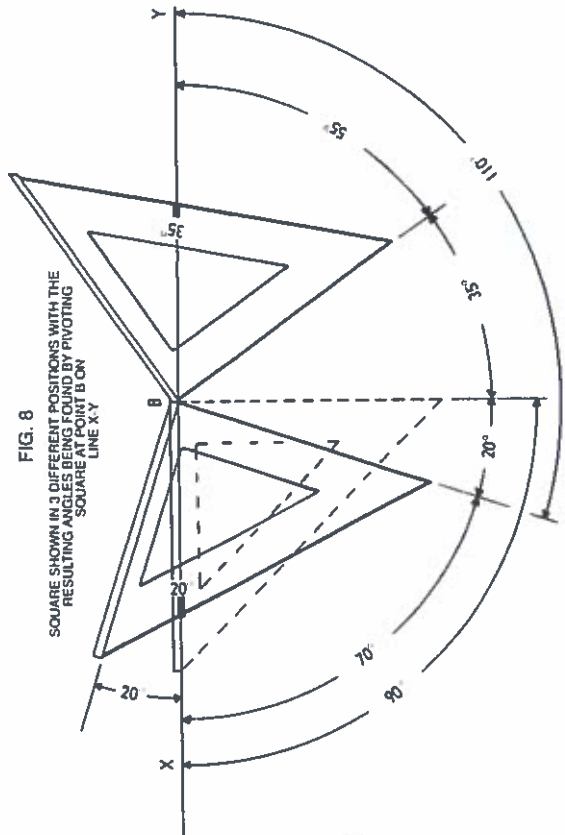


FIG. 8  
 SQUARE SHOWN IN 3 DIFFERENT POSITIONS WITH THE  
 RESULTING ANGLES BEING FOUND BY PIVOTING  
 SQUARE AT POINT B ON  
 LINE X-Y

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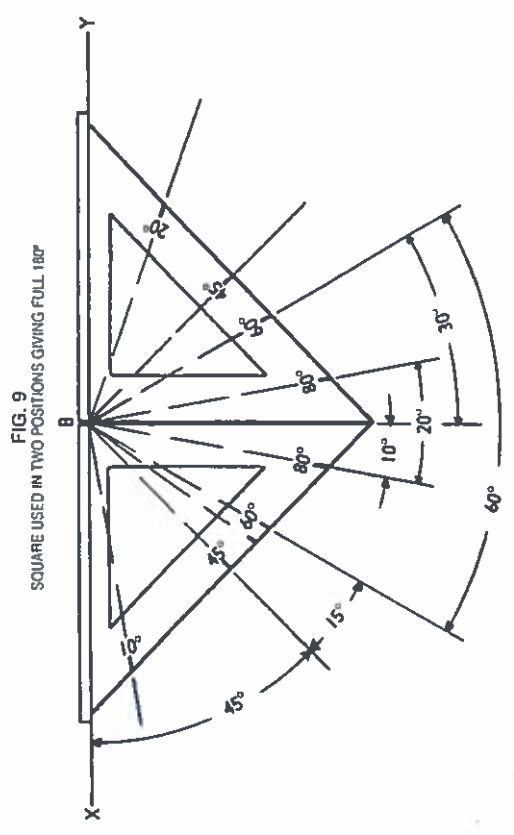


FIG. 9  
 SQUARE USED IN TWO POSITIONS GIVING FULL 180°

LINE X-Y REPRESENTS EDGE OF MATERIAL. POINT B IN PIVOT POINT OF SQUARE. HERE SQUARE IS NOT PIVOTED  
 POINTS ARE MARKED ON MATERIAL AT POINT B, AND AT DESIRED ANGLE. LINE DRAWN THRU THE TWO POINTS  
 GIVES THE ANGLE WANTED.

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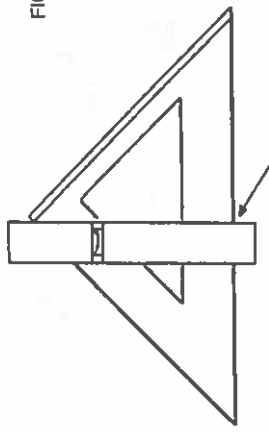


FIG. 10

PLACE A 7" (OR LONGER) LEVEL ON FACE OF SQUARE WITH TOP EDGE OF LEVEL ALWAYS RESTING AGAINST BAR. ALWAYS INDICATE THAT THE LEVEL IS BEING HELD PLUMB. PIVOT SQUARE FROM EDGE OF LEVEL BEING USING THE LEVEL AS A PLUMB LINE WILL GIVE FASTER READINGS BECAUSE YOU DON'T HAVE TO WAIT FOR THE SWINGING MOTION OF THE STRING (AS USED IN THE NEXT METHOD) TO STOP. SHOWS INDICATE POINT AT WHICH DEGREE IS SHOWN.

SQUARE HAS A NOTCH AT PIVOT POINT THROUGH WHICH A STRING IS PASSED. PLACE A WEIGHTED POINT ON STRING AND A PIECE OF WIRE TO THE STRING WHICH WILL ACT AS A WEIGHTED POINT. ALWAYS HANGING STRAIGHT DOWN (PLUMB). YOU MAY WISH TO EXTEND THE STRING PAST THE DEGREE SCALE AND PLACE SOME TYPE OF SMALL WEIGHT ON THE END TO MAKE IT HANG PLUMB.

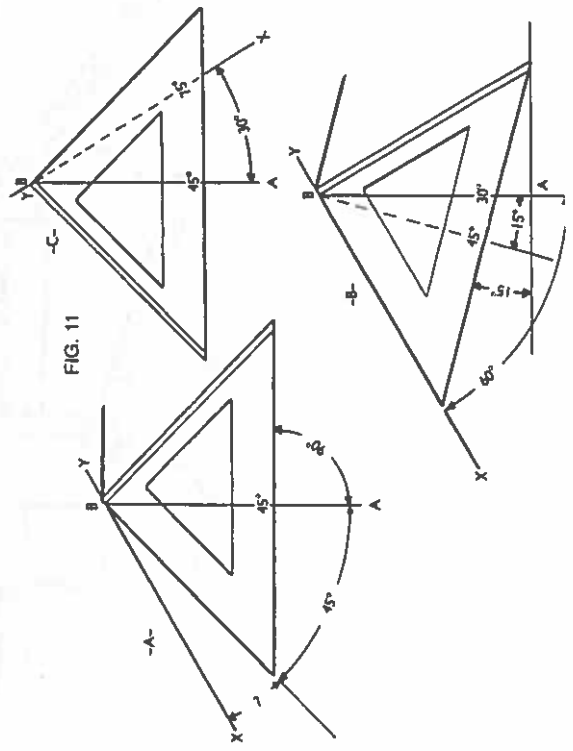
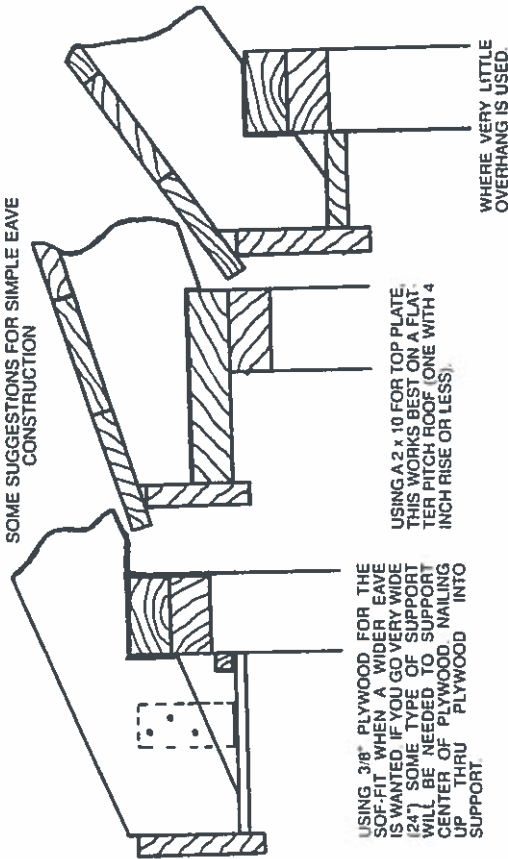


FIG. 11

SOME SUGGESTIONS FOR SIMPLE EAVE CONSTRUCTION



USING 3/8" PLYWOOD FOR THE SOF-FIT WHEN A WIDER EAVE IS WANTED IF YOU GO VERY WIDE (24") SOME TYPE OF SUPPORT WILL BE NEEDED TO SUPPORT CENTER OF PLYWOOD. NAILING UP THRU PLYWOOD INTO SUPPORT.

USING A 2 x 10 FOR TOP PLATE. THIS WORKS BEST ON A FLAT. TER PITCH ROOF (ONE WITH 4 INCH RISE OR LESS).

WHERE VERY LITTLE OVERHANG IS USED.

WIDTH OF BUILDING

Inch Rise	3 FEET		4 FEET	
	Com.	Hip	Com.	Hip
1	1'- 6 1/16"	2'- 1 1/2"	2'- 1/8"	2'- 10 "
2	1'- 6 1/4"	2'- 1 5/8"	2'- 3/8"	2'- 10 1/4"
3	1'- 6 1/2"	2'- 1 7/8"	2'- 3/4"	2'- 10 1/2"
4	1'- 7 "	2'- 2 1/8"	2'- 1 3/8"	2'- 10 7/8"
5	1'- 7 1/2"	2'- 2 5/8"	2'- 2 "	2'- 11 3/8"
6	1'- 8 1/4"	2'- 3 "	2'- 2 3/4"	3'- 0 "
7	1'- 8 7/8"	2'- 3 1/2"	2'- 3 3/4"	3'- 3/4"
8	1'- 9 5/8"	2'- 4 1/8"	2'- 4 7/8"	3'- 1 1/2"
9	1'- 10 1/2"	2'- 4 7/8"	2'- 6 "	3'- 2 3/8"
10	1'- 11 3/8"	2'- 5 5/8"	2'- 7 1/4"	3'- 3 3/8"
11	2'- 3/8"	2'- 6 3/8"	2'- 8 5/8"	3'- 4 3/8"
12	2'- 1 1/2"	2'- 7 1/8"	2'- 10 "	3'- 5 5/8"
13	2'- 2 9/16"	2'- 8 1/16"	2'- 11 3/8"	3'- 6 3/4"
14	2'- 3 11/16"	2'- 9 "	3'- 7/8"	3'- 8 "

Inch Rise	5 FEET		6 FEET	
	Com.	Hip	Com.	Hip
1	2'- 6 1/8"	3'- 6 1/2"	3'- 1/8"	4'- 3 "
2	2'- 6 1/2"	3'- 6 7/8"	3'- 1/2"	4'- 3 1/4"
3	2'- 7 "	3'- 7 1/8"	3'- 1 1/8"	4'- 3 5/8"
4	2'- 7 3/4"	3'- 7 5/8"	3'- 2 "	4'- 4 3/8"
5	2'- 8 1/2"	3'- 8 1/4"	3'- 3 "	4'- 5 1/8"
6	2'- 9 1/2"	3'- 9 "	3'- 4 1/4"	4'- 6 "
7	2'- 10 3/4"	3'- 9 7/8"	3'- 5 3/4"	4'- 7 1/8"
8	3'- 1/8"	3'- 10 7/8"	3'- 7 1/4"	4'- 8 1/4"
9	3'- 1 1/2"	4'- 0 "	3'- 9 "	4'- 9 5/8"
10	3'- 3 3/8"	4'- 1 1/4"	3'- 10 7/8"	4'- 11 1/8"
11	3'- 4 3/4"	4'- 2 1/2"	4'- 7/8"	5'- 5/8"
12	3'- 6 1/2"	4'- 4 "	4'- 2 7/8"	5'- 2 3/8"
13	3'- 8 1/4"	4'- 5 7/16"	4'- 5 1/16"	5'- 4 1/8"
14	3'- 10 1/8"	4'- 7 "	4'- 7 5/16"	5'- 6 "



**WIDTH OF BUILDING**

Inch Rise	7 FEET		8 FEET	
	Com.	Hip	Com.	Hip
1	3'- 6 <sup>1</sup> / <sub>8</sub> "	4'-11 <sup>1</sup> / <sub>2</sub> "	4'- 1 <sup>1</sup> / <sub>8</sub> "	5'- 8 "
2	3'- 6 <sup>5</sup> / <sub>8</sub> "	4'-11 <sup>7</sup> / <sub>8</sub> "	4'- 3 <sup>1</sup> / <sub>8</sub> "	5'- 8 <sup>3</sup> / <sub>8</sub> "
3	3'- 7 <sup>1</sup> / <sub>4</sub> "	5'- 1 <sup>1</sup> / <sub>4</sub> "	4'- 1 <sup>1</sup> / <sub>2</sub> "	5'- 8 <sup>7</sup> / <sub>8</sub> "
4	3'- 8 <sup>3</sup> / <sub>8</sub> "	5'- 1 <sup>5</sup> / <sub>8</sub> "	4'- 2 <sup>5</sup> / <sub>8</sub> "	5'- 9 <sup>1</sup> / <sub>4</sub> "
5	3'- 9 <sup>1</sup> / <sub>2</sub> "	5'- 2 "	4'- 4 "	5'-10 <sup>3</sup> / <sub>4</sub> "
6	3'- 11 "	5'- 3 "	4'- 5 <sup>5</sup> / <sub>8</sub> "	6'- 0 "
7	4'- 3 <sup>3</sup> / <sub>4</sub> "	5'- 4 <sup>1</sup> / <sub>4</sub> "	4'- 7 <sup>5</sup> / <sub>8</sub> "	6'- 1 <sup>1</sup> / <sub>2</sub> "
8	4'- 2 <sup>1</sup> / <sub>2</sub> "	5'- 5 <sup>5</sup> / <sub>8</sub> "	4'- 9 <sup>5</sup> / <sub>8</sub> "	6'- 3 "
9	4'- 4 <sup>1</sup> / <sub>2</sub> "	5'- 7 <sup>1</sup> / <sub>4</sub> "	5'- 0 "	6'- 4 <sup>7</sup> / <sub>8</sub> "
10	4'- 6 <sup>3</sup> / <sub>4</sub> "	5'- 9 "	5'- 2 <sup>1</sup> / <sub>2</sub> "	6'- 6 <sup>1</sup> / <sub>4</sub> "
11	4'- 9 "	5'-10 <sup>3</sup> / <sub>4</sub> "	5'- 5 <sup>1</sup> / <sub>8</sub> "	6'- 8 <sup>3</sup> / <sub>4</sub> "
12	4'-11 <sup>3</sup> / <sub>8</sub> "	6'- 3 <sup>3</sup> / <sub>4</sub> "	5'- 7 <sup>5</sup> / <sub>8</sub> "	6'-11 <sup>1</sup> / <sub>8</sub> "
13	5'- 1 <sup>5</sup> / <sub>16</sub> "	6'- 2 <sup>13</sup> / <sub>16</sub> "	5'-10 <sup>3</sup> / <sub>4</sub> "	7'- 1 <sup>1</sup> / <sub>2</sub> "
14	5'- 4 <sup>3</sup> / <sub>16</sub> "	6'- 5 "	6'- 1 <sup>3</sup> / <sub>4</sub> "	7'- 4 "

Inch Rise	9 FEET		10 FEET	
	Com.	Hip	Com.	Hip
1	4'- 6 <sup>1</sup> / <sub>4</sub> "	6'- 4 <sup>1</sup> / <sub>2</sub> "	5'- 1 <sup>1</sup> / <sub>4</sub> "	7'- 1 "
2	4'- 6 <sup>3</sup> / <sub>4</sub> "	6'- 5 "	5'- 7 <sup>1</sup> / <sub>8</sub> "	7'- 1 <sup>1</sup> / <sub>2</sub> "
3	4'- 7 <sup>5</sup> / <sub>8</sub> "	6'- 5 <sup>1</sup> / <sub>2</sub> "	5'- 1 <sup>7</sup> / <sub>8</sub> "	7'- 2 <sup>1</sup> / <sub>8</sub> "
4	4'- 9 "	6'- 6 <sup>3</sup> / <sub>8</sub> "	5'- 3 <sup>1</sup> / <sub>4</sub> "	7'- 3 <sup>1</sup> / <sub>4</sub> "
5	4'-10 <sup>1</sup> / <sub>2</sub> "	6'- 7 <sup>5</sup> / <sub>8</sub> "	5'- 5 "	7'- 4 <sup>1</sup> / <sub>2</sub> "
6	5'- 3 <sup>3</sup> / <sub>8</sub> "	6'- 9 "	5'- 7 <sup>1</sup> / <sub>8</sub> "	7'- 6 "
7	5'- 2 <sup>5</sup> / <sub>8</sub> "	6'-10 <sup>5</sup> / <sub>8</sub> "	5'- 9 <sup>1</sup> / <sub>2</sub> "	7'- 7 <sup>3</sup> / <sub>4</sub> "
8	5'- 4 <sup>7</sup> / <sub>8</sub> "	7'- 3 <sup>3</sup> / <sub>8</sub> "	6'- 1 <sup>1</sup> / <sub>8</sub> "	7'- 9 <sup>3</sup> / <sub>4</sub> "
9	5'- 7 <sup>1</sup> / <sub>2</sub> "	7'- 2 <sup>1</sup> / <sub>2</sub> "	6'- 3 "	8'- 0 "
10	5'-10 <sup>3</sup> / <sub>8</sub> "	7'- 4 <sup>5</sup> / <sub>8</sub> "	6'- 6 <sup>1</sup> / <sub>8</sub> "	8'- 2 <sup>1</sup> / <sub>2</sub> "
11	6'- 1 <sup>1</sup> / <sub>4</sub> "	7'- 7 "	6'- 9 <sup>3</sup> / <sub>8</sub> "	8'- 5 <sup>1</sup> / <sub>8</sub> "
12	6'- 4 <sup>3</sup> / <sub>8</sub> "	7'- 9 <sup>1</sup> / <sub>2</sub> "	7'- 7 <sup>1</sup> / <sub>8</sub> "	8'- 7 <sup>1</sup> / <sub>8</sub> "
13	6'- 7 <sup>5</sup> / <sub>8</sub> "	8'- 3 <sup>1</sup> / <sub>16</sub> "	7'- 4 <sup>7</sup> / <sub>16</sub> "	8'-10 <sup>7</sup> / <sub>8</sub> "
14	6'-11 "	8'- 3 "	7'- 8 <sup>3</sup> / <sub>16</sub> "	9'- 2 "

**WIDTH OF BUILDING**

Inch Rise	11 FEET		12 FEET	
	Com.	Hip	Com.	Hip
1	5'- 6 <sup>1</sup> / <sub>4</sub> "	7'- 9 <sup>1</sup> / <sub>2</sub> "	6'- 1 <sup>1</sup> / <sub>4</sub> "	8'- 6 "
2	5'- 7 "	7'-10 "	6'- 1 "	8'- 6 <sup>1</sup> / <sub>2</sub> "
3	5'- 8 "	7'-10 <sup>3</sup> / <sub>4</sub> "	6'- 2 <sup>1</sup> / <sub>4</sub> "	8'- 7 <sup>3</sup> / <sub>8</sub> "
4	5'- 9 <sup>5</sup> / <sub>8</sub> "	8'- 0 "	6'- 3 <sup>7</sup> / <sub>8</sub> "	8'- 8 <sup>5</sup> / <sub>8</sub> "
5	5'-11 <sup>1</sup> / <sub>2</sub> "	8'- 1 <sup>3</sup> / <sub>8</sub> "	6'- 6 "	8'-10 <sup>1</sup> / <sub>4</sub> "
6	6'- 1 <sup>7</sup> / <sub>8</sub> "	8'- 3 "	6'- 8 <sup>1</sup> / <sub>2</sub> "	9'- 0 "
7	6'- 4 <sup>1</sup> / <sub>2</sub> "	8'- 4 <sup>7</sup> / <sub>8</sub> "	6'-11 <sup>3</sup> / <sub>8</sub> "	9'- 2 <sup>1</sup> / <sub>8</sub> "
8	6'- 7 <sup>3</sup> / <sub>8</sub> "	8'- 7 <sup>1</sup> / <sub>8</sub> "	7'- 2 <sup>1</sup> / <sub>2</sub> "	9'- 4 <sup>5</sup> / <sub>8</sub> "
9	6'-10 <sup>1</sup> / <sub>2</sub> "	8'- 9 <sup>5</sup> / <sub>8</sub> "	7'- 6 "	9'- 7 <sup>1</sup> / <sub>4</sub> "
10	7'- 2 "	9'- 3 <sup>3</sup> / <sub>8</sub> "	7'- 9 <sup>3</sup> / <sub>4</sub> "	9'-10 <sup>1</sup> / <sub>4</sub> "
11	7'- 5 <sup>1</sup> / <sub>2</sub> "	9'- 3 <sup>1</sup> / <sub>4</sub> "	8'- 1 <sup>5</sup> / <sub>8</sub> "	10'- 1 <sup>3</sup> / <sub>8</sub> "
12	7'- 9 <sup>5</sup> / <sub>8</sub> "	9'- 6 <sup>1</sup> / <sub>4</sub> "	8'- 5 <sup>7</sup> / <sub>8</sub> "	10'- 4 <sup>5</sup> / <sub>8</sub> "
13	8'- 1 <sup>5</sup> / <sub>16</sub> "	9'- 9 <sup>9</sup> / <sub>16</sub> "	8'-10 <sup>1</sup> / <sub>8</sub> "	10'- 8 <sup>1</sup> / <sub>4</sub> "
14	8'- 5 <sup>7</sup> / <sub>16</sub> "	10'- 1 "	9'- 2 <sup>5</sup> / <sub>8</sub> "	11'- "

Inch Rise	13 FEET		14 FEET	
	Com.	Hip	Com.	Hip
1	6'- 6 <sup>1</sup> / <sub>4</sub> "	9'- 2 <sup>1</sup> / <sub>2</sub> "	7'- 1 <sup>1</sup> / <sub>4</sub> "	9'-11 "
2	6'- 7 <sup>1</sup> / <sub>8</sub> "	9'- 3 "	7'- 1 <sup>1</sup> / <sub>8</sub> "	9'-11 <sup>5</sup> / <sub>8</sub> "
3	6'- 8 <sup>1</sup> / <sub>2</sub> "	9'- 4 "	7'- 2 <sup>5</sup> / <sub>8</sub> "	10'- 5 <sup>5</sup> / <sub>8</sub> "
4	6'-10 <sup>1</sup> / <sub>4</sub> "	9'- 5 <sup>3</sup> / <sub>8</sub> "	7'- 4 <sup>1</sup> / <sub>2</sub> "	10'- 2 <sup>1</sup> / <sub>8</sub> "
5	7'- 1 <sup>1</sup> / <sub>2</sub> "	9'- 7 <sup>1</sup> / <sub>8</sub> "	7'- 7 "	10'- 3 <sup>7</sup> / <sub>8</sub> "
6	7'- 3 <sup>1</sup> / <sub>4</sub> "	9'- 9 "	7'-10 "	10'- 6 "
7	7'- 6 <sup>3</sup> / <sub>8</sub> "	9'-11 <sup>1</sup> / <sub>4</sub> "	8'- 1 <sup>3</sup> / <sub>8</sub> "	10'- 8 <sup>1</sup> / <sub>2</sub> "
8	7'- 9 <sup>3</sup> / <sub>4</sub> "	10'- 2 "	8'- 5 "	10'-11 <sup>3</sup> / <sub>8</sub> "
9	8'- 1 <sup>1</sup> / <sub>2</sub> "	10'- 4 <sup>7</sup> / <sub>8</sub> "	8'- 9 "	11'- 2 <sup>1</sup> / <sub>2</sub> "
10	8'- 5 <sup>5</sup> / <sub>8</sub> "	10'- 8 <sup>1</sup> / <sub>8</sub> "	9'- 1 <sup>3</sup> / <sub>8</sub> "	11'- 5 <sup>7</sup> / <sub>8</sub> "
11	8'- 9 <sup>3</sup> / <sub>4</sub> "	10'-11 <sup>5</sup> / <sub>8</sub> "	9'- 6 "	11'- 9 <sup>5</sup> / <sub>8</sub> "
12	9'- 2 <sup>3</sup> / <sub>8</sub> "	11'- 3 "	9'-10 <sup>3</sup> / <sub>4</sub> "	12'- 1 <sup>1</sup> / <sub>2</sub> "
13	9'- 7 "	11'- 6 <sup>15</sup> / <sub>16</sub> "	10'- 3 <sup>13</sup> / <sub>16</sub> "	12'- 5 <sup>5</sup> / <sub>8</sub> "
14	9'- 11 <sup>7</sup> / <sub>8</sub> "	11'-11 "	10'- 9 <sup>1</sup> / <sub>16</sub> "	12'-10 "

**WIDTH OF BUILDING**

Inch Rise	15 FEET		16 FEET	
	Com.	Hip	Com.	Hip
1	7'- 6 <sup>1</sup> / <sub>4</sub> "	10'- 7 <sup>1</sup> / <sub>2</sub> "	8'- 3 <sup>3</sup> / <sub>8</sub> "	11'- 4 "
2	7'- 7 <sup>1</sup> / <sub>4</sub> "	10'- 8 <sup>1</sup> / <sub>6</sub> "	8'- 1 <sup>3</sup> / <sub>8</sub> "	11'- 4 <sup>3</sup> / <sub>8</sub> "
3	7'- 8 <sup>3</sup> / <sub>4</sub> "	10'- 9 <sup>1</sup> / <sub>4</sub> "	8'- 3 "	11'- 5 <sup>7</sup> / <sub>8</sub> "
4	7'- 10 <sup>7</sup> / <sub>8</sub> "	10'- 10 <sup>7</sup> / <sub>8</sub> "	8'- 5 <sup>1</sup> / <sub>4</sub> "	11'- 7 <sup>1</sup> / <sub>2</sub> "
5	8'- 1 <sup>1</sup> / <sub>2</sub> "	11'- 3 <sup>3</sup> / <sub>4</sub> "	8'- 8 "	11'- 9 <sup>5</sup> / <sub>8</sub> "
6	8'- 4 <sup>3</sup> / <sub>4</sub> "	11'- 3 "	8'- 11 <sup>1</sup> / <sub>2</sub> "	12'- 0 "
7	8'- 8 <sup>3</sup> / <sub>8</sub> "	11'- 5 <sup>5</sup> / <sub>8</sub> "	9'- 3 <sup>1</sup> / <sub>4</sub> "	12'- 2 <sup>7</sup> / <sub>8</sub> "
8	9'- 1 <sup>1</sup> / <sub>4</sub> "	11'- 8 <sup>3</sup> / <sub>4</sub> "	9'- 7 <sup>3</sup> / <sub>8</sub> "	12'- 6 <sup>1</sup> / <sub>8</sub> "
9	9'- 4 <sup>1</sup> / <sub>2</sub> "	12'- 1 <sup>1</sup> / <sub>8</sub> "	10'- 0 "	12'- 9 <sup>5</sup> / <sub>8</sub> "
10	9'- 9 <sup>1</sup> / <sub>4</sub> "	12'- 3 <sup>3</sup> / <sub>4</sub> "	10'- 5 "	13'- 1 <sup>5</sup> / <sub>8</sub> "
11	10'- 2 <sup>1</sup> / <sub>8</sub> "	12'- 7 <sup>3</sup> / <sub>4</sub> "	10'- 10 <sup>1</sup> / <sub>4</sub> "	13'- 5 <sup>7</sup> / <sub>8</sub> "
12	10'- 7 <sup>1</sup> / <sub>4</sub> "	12'- 11 <sup>7</sup> / <sub>8</sub> "	11'- 3 <sup>3</sup> / <sub>4</sub> "	13'- 10 <sup>1</sup> / <sub>4</sub> "
13	11'- 1 <sup>1</sup> / <sub>16</sub> "	13'- 4 <sup>5</sup> / <sub>16</sub> "	11'- 9 <sup>9</sup> / <sub>16</sub> "	14'- 3 "
14	11'- 6 <sup>5</sup> / <sub>16</sub> "	13'- 9 "	12'- 3 <sup>1</sup> / <sub>2</sub> "	14'- 8 "

Inch Rise	17 FEET		18 FEET	
	Com.	Hip	Com.	Hip
1	8'- 6 <sup>3</sup> / <sub>8</sub> "	12'- 1 <sup>1</sup> / <sub>2</sub> "	9'- 3 <sup>3</sup> / <sub>8</sub> "	12'- 9 "
2	8'- 7 <sup>1</sup> / <sub>2</sub> "	12'- 1 <sup>1</sup> / <sub>4</sub> "	9'- 1 <sup>1</sup> / <sub>2</sub> "	12'- 9 <sup>7</sup> / <sub>8</sub> "
3	8'- 9 <sup>1</sup> / <sub>6</sub> "	12'- 2 <sup>1</sup> / <sub>2</sub> "	9'- 3 <sup>3</sup> / <sub>8</sub> "	12'- 11 <sup>1</sup> / <sub>4</sub> "
4	8'- 11 <sup>5</sup> / <sub>8</sub> "	12'- 4 <sup>1</sup> / <sub>4</sub> "	9'- 5 <sup>7</sup> / <sub>8</sub> "	13'- 1 "
5	9'- 2 <sup>1</sup> / <sub>2</sub> "	12'- 6 <sup>1</sup> / <sub>2</sub> "	9'- 9 "	13'- 3 <sup>3</sup> / <sub>8</sub> "
6	9'- 6 <sup>1</sup> / <sub>4</sub> "	12'- 9 "	10'- 7 <sup>7</sup> / <sub>8</sub> "	13'- 6 "
7	9'- 10 <sup>1</sup> / <sub>4</sub> "	13'- 0 "	10'- 5 <sup>1</sup> / <sub>8</sub> "	13'- 9 <sup>1</sup> / <sub>4</sub> "
8	10'- 2 <sup>5</sup> / <sub>8</sub> "	13'- 3 <sup>1</sup> / <sub>2</sub> "	10'- 9 <sup>3</sup> / <sub>4</sub> "	14'- 7 <sup>7</sup> / <sub>8</sub> "
9	10'- 7 <sup>1</sup> / <sub>2</sub> "	13'- 7 <sup>1</sup> / <sub>4</sub> "	11'- 3 "	14'- 4 <sup>7</sup> / <sub>8</sub> "
10	11'- 7 <sup>7</sup> / <sub>8</sub> "	13'- 11 <sup>1</sup> / <sub>2</sub> "	11'- 8 <sup>3</sup> / <sub>8</sub> "	14'- 9 <sup>3</sup> / <sub>8</sub> "
11	11'- 6 <sup>1</sup> / <sub>2</sub> "	14'- 4 "	12'- 2 <sup>1</sup> / <sub>2</sub> "	15'- 2 "
12	12'- 1 <sup>1</sup> / <sub>4</sub> "	14'- 8 <sup>5</sup> / <sub>8</sub> "	12'- 8 <sup>3</sup> / <sub>4</sub> "	15'- 7 "
13	12'- 6 <sup>3</sup> / <sub>8</sub> "	15'- 1 <sup>1</sup> / <sub>16</sub> "	13'- 3 <sup>1</sup> / <sub>4</sub> "	16'- 3 <sup>3</sup> / <sub>8</sub> "
14	13'- 3 <sup>1</sup> / <sub>4</sub> "	15'- 7 "	13'- 9 <sup>15</sup> / <sub>16</sub> "	16'- 6 "

**WIDTH OF BUILDING**

Inch Rise	19 FEET		20 FEET	
	Com.	Hip	Com.	Hip
1	9'- 6 <sup>3</sup> / <sub>8</sub> "	13'- 5 <sup>1</sup> / <sub>2</sub> "	10'- 3 <sup>3</sup> / <sub>8</sub> "	14'- 2 "
2	9'- 7 <sup>5</sup> / <sub>8</sub> "	13'- 6 <sup>3</sup> / <sub>8</sub> "	10'- 1 <sup>5</sup> / <sub>8</sub> "	14'- 2 <sup>7</sup> / <sub>8</sub> "
3	9'- 9 <sup>5</sup> / <sub>8</sub> "	13'- 7 <sup>3</sup> / <sub>4</sub> "	10'- 3 <sup>3</sup> / <sub>4</sub> "	14'- 4 <sup>3</sup> / <sub>8</sub> "
4	10'- 1 <sup>1</sup> / <sub>4</sub> "	13'- 9 <sup>3</sup> / <sub>4</sub> "	10'- 6 <sup>1</sup> / <sub>2</sub> "	14'- 6 <sup>3</sup> / <sub>8</sub> "
5	10'- 3 <sup>1</sup> / <sub>2</sub> "	14'- 1 <sup>1</sup> / <sub>4</sub> "	10'- 10 "	14'- 9 "
6	10'- 7 <sup>5</sup> / <sub>8</sub> "	14'- 3 "	11'- 2 <sup>1</sup> / <sub>4</sub> "	15'- 0 "
7	11'- 1 <sup>1</sup> / <sub>8</sub> "	14'- 6 <sup>3</sup> / <sub>8</sub> "	11'- 7 "	15'- 3 <sup>5</sup> / <sub>8</sub> "
8	11'- 5 "	14'- 10 <sup>1</sup> / <sub>4</sub> "	12'- 1 <sup>1</sup> / <sub>4</sub> "	15'- 7 <sup>5</sup> / <sub>8</sub> "
9	11'- 10 <sup>1</sup> / <sub>2</sub> "	15'- 2 <sup>1</sup> / <sub>2</sub> "	12'- 6 "	16'- 1 <sup>1</sup> / <sub>8</sub> "
10	12'- 4 <sup>1</sup> / <sub>2</sub> "	15'- 7 <sup>1</sup> / <sub>4</sub> "	13'- 1 <sup>1</sup> / <sub>4</sub> "	16'- 5 "
11	12'- 10 <sup>5</sup> / <sub>8</sub> "	16'- 1 <sup>1</sup> / <sub>8</sub> "	13'- 6 <sup>7</sup> / <sub>8</sub> "	16'- 10 <sup>1</sup> / <sub>4</sub> "
12	13'- 5 <sup>1</sup> / <sub>4</sub> "	16'- 5 <sup>3</sup> / <sub>8</sub> "	14'- 1 <sup>3</sup> / <sub>4</sub> "	17'- 3 <sup>7</sup> / <sub>8</sub> "
13	14'- 1 <sup>1</sup> / <sub>4</sub> "	16'- 11 "	14'- 9 "	17'- 9 <sup>3</sup> / <sub>8</sub> "
14	14'- 7 <sup>1</sup> / <sub>4</sub> "	17'- 5 "	15'- 4 <sup>3</sup> / <sub>8</sub> "	18'- 4 "
15	15'- 2 <sup>1</sup> / <sub>2</sub> "	17'- 11 <sup>1</sup> / <sub>8</sub> "	16'- 1 <sup>1</sup> / <sub>8</sub> "	18'- 10 <sup>1</sup> / <sub>4</sub> "
16	15'- 10 "	18'- 5 <sup>1</sup> / <sub>2</sub> "	16'- 8 "	19'- 5 <sup>1</sup> / <sub>4</sub> "
17	16'- 5 <sup>5</sup> / <sub>8</sub> "	19'- 1 <sup>1</sup> / <sub>4</sub> "	17'- 4 <sup>1</sup> / <sub>8</sub> "	20'- 1 <sup>1</sup> / <sub>4</sub> "
18	17'- 1 <sup>1</sup> / <sub>2</sub> "	19'- 7 "	18'- 1 <sup>1</sup> / <sub>4</sub> "	20'- 7 <sup>3</sup> / <sub>8</sub> "
19	17'- 9 <sup>1</sup> / <sub>2</sub> "	20'- 2 "	18'- 8 <sup>3</sup> / <sub>4</sub> "	21'- 2 <sup>3</sup> / <sub>4</sub> "
20	18'- 5 <sup>1</sup> / <sub>2</sub> "	20'- 9 <sup>1</sup> / <sub>4</sub> "	19'- 5 <sup>1</sup> / <sub>4</sub> "	21'- 10 <sup>3</sup> / <sub>8</sub> "
21	19'- 1 <sup>3</sup> / <sub>4</sub> "	21'- 4 <sup>1</sup> / <sub>2</sub> "	20'- 1 <sup>7</sup> / <sub>8</sub> "	22'- 6 "
22	19'- 10 <sup>1</sup> / <sub>8</sub> "	22'- 0 "	20'- 10 <sup>5</sup> / <sub>8</sub> "	23'- 1 <sup>7</sup> / <sub>8</sub> "
23	20'- 6 <sup>1</sup> / <sub>2</sub> "	22'- 7 <sup>1</sup> / <sub>2</sub> "	21'- 7 <sup>3</sup> / <sub>8</sub> "	23'- 9 <sup>7</sup> / <sub>8</sub> "
24	21'- 2 <sup>7</sup> / <sub>8</sub> "	23'- 3 <sup>1</sup> / <sub>4</sub> "	22'- 4 <sup>1</sup> / <sub>4</sub> "	24'- 6 "

**WIDTH OF BUILDING**

Inch Rise	21 FEET		22 FEET	
	Com.	Hip	Com.	Hip
1	10'- 6 <sup>3</sup> / <sub>8</sub> "	14'-10 <sup>1</sup> / <sub>2</sub> "	11'- 1 <sup>1</sup> / <sub>2</sub> "	15'- 7 "
2	10'- 7 <sup>3</sup> / <sub>4</sub> "	14'-11 <sup>3</sup> / <sub>8</sub> "	11'- 1 <sup>3</sup> / <sub>4</sub> "	15'- 8 "
3	10'-10 "	15'- 1 "	11'- 4 <sup>1</sup> / <sub>8</sub> "	15'- 9 <sup>1</sup> / <sub>2</sub> "
4	11'- 7 <sup>6</sup> / <sub>8</sub> "	15'- 3 <sup>1</sup> / <sub>8</sub> "	11'- 7 <sup>1</sup> / <sub>8</sub> "	15'-11 <sup>7</sup> / <sub>8</sub> "
5	11'- 4 <sup>1</sup> / <sub>2</sub> "	15'- 5 <sup>7</sup> / <sub>8</sub> "	11'-11 "	16'- 2 <sup>3</sup> / <sub>4</sub> "
6	11'- 9 "	15'- 9 "	12'- 3 <sup>5</sup> / <sub>8</sub> "	16'- 6 "
7	12'- 2 "	16'- 3 <sup>1</sup> / <sub>4</sub> "	12'- 8 <sup>7</sup> / <sub>8</sub> "	16'-10 "
8	12'- 7 <sup>1</sup> / <sub>2</sub> "	16'- 5 "	13'- 2 <sup>5</sup> / <sub>8</sub> "	17'- 2 <sup>3</sup> / <sub>8</sub> "
9	13'- 1 <sup>1</sup> / <sub>2</sub> "	16'- 9 <sup>3</sup> / <sub>4</sub> "	13'- 9 "	17'- 7 <sup>3</sup> / <sub>8</sub> "
10	13'- 8 "	17'- 2 <sup>7</sup> / <sub>8</sub> "	14'- 3 <sup>7</sup> / <sub>8</sub> "	18'- 3 <sup>1</sup> / <sub>4</sub> "
11	14'- 3 "	17'- 8 <sup>3</sup> / <sub>8</sub> "	14'-11 <sup>1</sup> / <sub>8</sub> "	18'- 6 <sup>1</sup> / <sub>2</sub> "
12	14'-10 <sup>3</sup> / <sub>16</sub> "	18'- 2 <sup>1</sup> / <sub>4</sub> "	15'- 6 <sup>11</sup> / <sub>16</sub> "	19'- 5 <sup>5</sup> / <sub>8</sub> "
13	15'- 5 <sup>3</sup> / <sub>4</sub> "	18'- 8 <sup>7</sup> / <sub>16</sub> "	16'- 2 <sup>1</sup> / <sub>8</sub> "	19'- 7 <sup>1</sup> / <sub>8</sub> "
14	16'- 1 <sup>5</sup> / <sub>8</sub> "	19'- 3 "	16'-10 <sup>13</sup> / <sub>16</sub> "	20'- 2 "

Inch Rise	23 FEET		24 FEET	
	Com.	Hip	Com.	Hip
1	11'- 6 <sup>1</sup> / <sub>2</sub> "	16'- 3 <sup>1</sup> / <sub>2</sub> "	12'- 1 <sup>1</sup> / <sub>2</sub> "	17'- 0 "
2	11'- 7 <sup>7</sup> / <sub>8</sub> "	16'- 4 <sup>1</sup> / <sub>2</sub> "	12'- 1 <sup>7</sup> / <sub>8</sub> "	17'- 1 <sup>1</sup> / <sub>8</sub> "
3	11'-10 <sup>3</sup> / <sub>8</sub> "	16'- 6 <sup>1</sup> / <sub>8</sub> "	12'- 4 <sup>1</sup> / <sub>2</sub> "	17'- 2 <sup>3</sup> / <sub>4</sub> "
4	12'- 1 <sup>1</sup> / <sub>2</sub> "	16'- 8 <sup>5</sup> / <sub>8</sub> "	12'- 7 <sup>3</sup> / <sub>4</sub> "	17'- 5 <sup>1</sup> / <sub>4</sub> "
5	12'- 5 <sup>1</sup> / <sub>2</sub> "	16'-11 <sup>5</sup> / <sub>8</sub> "	13'- 0 "	17'- 8 <sup>3</sup> / <sub>8</sub> "
6	12'-10 <sup>3</sup> / <sub>8</sub> "	17'- 3 "	13'- 5 "	18'- 0 "
7	13'- 3 <sup>1</sup> / <sub>8</sub> "	17'- 7 <sup>1</sup> / <sub>8</sub> "	13'-10 <sup>3</sup> / <sub>4</sub> "	18'- 4 <sup>3</sup> / <sub>8</sub> "
8	13'- 9 <sup>7</sup> / <sub>8</sub> "	17'-11 <sup>3</sup> / <sub>4</sub> "	14'- 5 "	18'- 9 <sup>1</sup> / <sub>8</sub> "
9	14'- 4 <sup>1</sup> / <sub>2</sub> "	18'- 5 "	15'- 0 "	19'- 2 <sup>1</sup> / <sub>2</sub> "
10	14'-11 <sup>3</sup> / <sub>4</sub> "	18'-10 <sup>5</sup> / <sub>8</sub> "	15'- 7 <sup>1</sup> / <sub>2</sub> "	19'- 8 <sup>3</sup> / <sub>8</sub> "
11	15'- 7 <sup>1</sup> / <sub>4</sub> "	19'- 4 <sup>5</sup> / <sub>8</sub> "	16'- 3 <sup>3</sup> / <sub>8</sub> "	20'- 2 <sup>5</sup> / <sub>8</sub> "
12	16'- 3 <sup>1</sup> / <sub>8</sub> "	19'-11 "	16'-11 <sup>5</sup> / <sub>8</sub> "	20'- 9 <sup>3</sup> / <sub>8</sub> "
13	16'-11 <sup>7</sup> / <sub>16</sub> "	20'- 5 <sup>13</sup> / <sub>16</sub> "	17'- 8 <sup>5</sup> / <sub>16</sub> "	21'- 4 <sup>1</sup> / <sub>2</sub> "
14	17'- 8 <sup>1</sup> / <sub>16</sub> "	21'- 1 "	18'- 5 <sup>1</sup> / <sub>4</sub> "	22'- "

**WIDTH OF BUILDING**

Inch Rise	25 FEET		26 FEET	
	Com.	Hip	Com.	Hip
1	12'- 6 <sup>1</sup> / <sub>2</sub> "	17'- 8 <sup>1</sup> / <sub>2</sub> "	13'- 1 <sup>1</sup> / <sub>2</sub> "	18'- 5 "
2	12'- 8 "	17'- 9 <sup>5</sup> / <sub>8</sub> "	13'- 2 <sup>1</sup> / <sub>8</sub> "	18'- 6 <sup>1</sup> / <sub>4</sub> "
3	12'-10 <sup>5</sup> / <sub>8</sub> "	17'-11 <sup>3</sup> / <sub>8</sub> "	13'- 4 <sup>7</sup> / <sub>8</sub> "	18'- 8 "
4	13'- 2 <sup>1</sup> / <sub>8</sub> "	18'- 2 "	13'- 8 <sup>1</sup> / <sub>2</sub> "	18'-10 <sup>3</sup> / <sub>4</sub> "
5	13'- 6 <sup>1</sup> / <sub>2</sub> "	18'- 5 <sup>1</sup> / <sub>4</sub> "	14'- 1 "	19'- 2 <sup>1</sup> / <sub>8</sub> "
6	13'-11 <sup>3</sup> / <sub>4</sub> "	18'- 9 "	14'- 6 <sup>1</sup> / <sub>2</sub> "	19'- 6 "
7	14'- 5 <sup>1</sup> / <sub>4</sub> "	19'- 1 <sup>1</sup> / <sub>2</sub> "	15'- 3 <sup>1</sup> / <sub>4</sub> "	19'-10 <sup>5</sup> / <sub>8</sub> "
8	15'- 1 <sup>1</sup> / <sub>4</sub> "	19'- 6 <sup>1</sup> / <sub>2</sub> "	15'- 7 <sup>1</sup> / <sub>2</sub> "	20'- 3 <sup>1</sup> / <sub>8</sub> "
9	15'- 7 <sup>1</sup> / <sub>2</sub> "	20'- 1 <sup>1</sup> / <sub>8</sub> "	16'- 3 "	20'- 9 <sup>3</sup> / <sub>4</sub> "
10	16'- 3 <sup>1</sup> / <sub>4</sub> "	20'- 6 <sup>1</sup> / <sub>4</sub> "	16'-11 <sup>11</sup> / <sub>16</sub> "	21'- 4 <sup>1</sup> / <sub>16</sub> "
11	16'-11 <sup>1</sup> / <sub>2</sub> "	21'- 1 <sup>3</sup> / <sub>16</sub> "	17'- 7 <sup>5</sup> / <sub>8</sub> "	21'-10 <sup>15</sup> / <sub>16</sub> "
12	17'- 8 <sup>1</sup> / <sub>8</sub> "	21'- 7 <sup>3</sup> / <sub>16</sub> "	18'- 4 <sup>5</sup> / <sub>8</sub> "	22'- 6 <sup>3</sup> / <sub>16</sub> "
13	18'- 5 <sup>1</sup> / <sub>8</sub> "	22'- 3 <sup>1</sup> / <sub>4</sub> "	19'- 2 "	23'- 1 <sup>5</sup> / <sub>16</sub> "
14	19'- 2 <sup>1</sup> / <sub>2</sub> "	22'-11 "	19'-11 <sup>11</sup> / <sub>16</sub> "	23'- 6 <sup>7</sup> / <sub>16</sub> "

Inch Rise	27 FEET		28 FEET	
	Com.	Hip	Com.	Hip
1	13'- 6 <sup>1</sup> / <sub>2</sub> "	19'- 1 <sup>1</sup> / <sub>2</sub> "	14'- 5 <sup>1</sup> / <sub>8</sub> "	19'-10 "
2	13'- 8 <sup>1</sup> / <sub>4</sub> "	19'- 2 <sup>3</sup> / <sub>4</sub> "	14'- 2 <sup>1</sup> / <sub>4</sub> "	19'-11 <sup>1</sup> / <sub>4</sub> "
3	13'-11 "	19'- 4 <sup>5</sup> / <sub>8</sub> "	14'- 5 <sup>1</sup> / <sub>4</sub> "	20'- 1 <sup>1</sup> / <sub>4</sub> "
4	14'- 2 <sup>7</sup> / <sub>8</sub> "	19'- 7 <sup>1</sup> / <sub>2</sub> "	14'- 9 <sup>1</sup> / <sub>8</sub> "	20'- 4 <sup>1</sup> / <sub>8</sub> "
5	14'- 7 <sup>1</sup> / <sub>2</sub> "	19'-11 "	15'- 2 "	20'- 7 <sup>7</sup> / <sub>8</sub> "
6	15'- 1 "	20'- 3 "	15'- 7 <sup>7</sup> / <sub>8</sub> "	21'- 0 "
7	15'- 7 <sup>3</sup> / <sub>4</sub> "	20'- 7 <sup>3</sup> / <sub>4</sub> "	16'- 2 <sup>5</sup> / <sub>8</sub> "	21'- 5 "
8	16'- 2 <sup>3</sup> / <sub>4</sub> "	21'- 1 <sup>1</sup> / <sub>4</sub> "	16'- 9 <sup>7</sup> / <sub>8</sub> "	21'-10 <sup>5</sup> / <sub>8</sub> "
9	16'-10 <sup>1</sup> / <sub>2</sub> "	21'- 7 <sup>3</sup> / <sub>8</sub> "	17'- 6 "	22'- 5 "
10	17'- 7 "	22'- 2 "	18'- 2 <sup>5</sup> / <sub>8</sub> "	22'-11 <sup>7</sup> / <sub>8</sub> "
11	18'- 3 <sup>3</sup> / <sub>4</sub> "	22'- 9 "	18'-11 <sup>7</sup> / <sub>8</sub> "	23'- 7 <sup>1</sup> / <sub>8</sub> "
12	19'- 1 <sup>1</sup> / <sub>8</sub> "	23'- 4 <sup>1</sup> / <sub>2</sub> "	19'- 9 <sup>5</sup> / <sub>8</sub> "	24'- 3 "
13	19'-10 <sup>13</sup> / <sub>16</sub> "	24'- 5 <sup>5</sup> / <sub>8</sub> "	20'- 7 <sup>11</sup> / <sub>16</sub> "	24'-11 <sup>5</sup> / <sub>16</sub> "
14	20'- 8 <sup>15</sup> / <sub>16</sub> "	24'- 9 "	21'- 6 <sup>1</sup> / <sub>8</sub> "	25'- 8 "

**WIDTH OF BUILDING**

Inch Rise	29 FEET		30 FEET	
	Com.	Hip	Com.	Hip
1	14'- 6 <sup>5</sup> / <sub>8</sub> "	20'- 6 <sup>1</sup> / <sub>2</sub> "	15'- 5 <sup>5</sup> / <sub>8</sub> "	21'- 3 "
2	14'- 8 <sup>3</sup> / <sub>8</sub> "	20'- 7 <sup>3</sup> / <sub>4</sub> "	15'- 2 <sup>3</sup> / <sub>8</sub> "	21'- 4 <sup>3</sup> / <sub>8</sub> "
3	14'- 11 <sup>1</sup> / <sub>2</sub> "	20'- 9 <sup>7</sup> / <sub>8</sub> "	15'- 5 <sup>1</sup> / <sub>2</sub> "	21'- 6 <sup>1</sup> / <sub>2</sub> "
4	15'- 3 <sup>1</sup> / <sub>2</sub> "	21'- 7 <sup>7</sup> / <sub>8</sub> "	15'- 9 <sup>3</sup> / <sub>4</sub> "	21'- 9 <sup>5</sup> / <sub>8</sub> "
5	15'- 8 <sup>1</sup> / <sub>2</sub> "	21'- 4 <sup>3</sup> / <sub>4</sub> "	16'- 3 "	22'- 1 <sup>1</sup> / <sub>2</sub> "
6	16'- 2 <sup>5</sup> / <sub>8</sub> "	21'- 9 "	16'- 9 <sup>1</sup> / <sub>4</sub> "	22'- 6 "
7	16'- 9 <sup>5</sup> / <sub>8</sub> "	22'- 2 <sup>1</sup> / <sub>8</sub> "	17'- 4 <sup>1</sup> / <sub>2</sub> "	22'- 11 <sup>3</sup> / <sub>8</sub> "
8	17'- 5 <sup>1</sup> / <sub>8</sub> "	22'- 8 "	18'- 3 <sup>7</sup> / <sub>8</sub> "	23'- 5 <sup>3</sup> / <sub>8</sub> "
9	18'- 1 <sup>1</sup> / <sub>2</sub> "	23'- 2 <sup>5</sup> / <sub>8</sub> "	18'- 9 "	24'- 1 <sup>7</sup> / <sub>8</sub> "
10	18'- 10 <sup>3</sup> / <sub>8</sub> "	23'- 9 <sup>3</sup> / <sub>4</sub> "	19'- 6 <sup>3</sup> / <sub>8</sub> "	24'- 7 <sup>1</sup> / <sub>2</sub> "
11	19'- 8 "	24'- 5 <sup>1</sup> / <sub>4</sub> "	20'- 4 <sup>1</sup> / <sub>4</sub> "	25'- 3 <sup>3</sup> / <sub>8</sub> "
12	20'- 6 <sup>1</sup> / <sub>16</sub> "	25'- 1 <sup>3</sup> / <sub>8</sub> "	21'- 2 <sup>3</sup> / <sub>16</sub> "	25'- 11 <sup>3</sup> / <sub>4</sub> "
13	21'- 4 <sup>1</sup> / <sub>2</sub> "	25'- 10 "	22'- 1 <sup>3</sup> / <sub>8</sub> "	26'- 8 <sup>1</sup> / <sub>16</sub> "
14	22'- 3 <sup>3</sup> / <sub>8</sub> "	26'- 7 "	23'- 9 <sup>1</sup> / <sub>16</sub> "	27'- 6 "

Inch Rise	31 FEET		32 FEET	
	Com.	Hip	Com.	Hip
1	15'- 6 <sup>5</sup> / <sub>8</sub> "	21'- 11 <sup>1</sup> / <sub>2</sub> "	16'- 5 <sup>5</sup> / <sub>8</sub> "	22'- 8 "
2	15'- 8 <sup>1</sup> / <sub>2</sub> "	22'- 7 <sup>7</sup> / <sub>8</sub> "	16'- 2 <sup>1</sup> / <sub>2</sub> "	22'- 9 <sup>1</sup> / <sub>2</sub> "
3	15'- 11 <sup>5</sup> / <sub>8</sub> "	22'- 3 <sup>1</sup> / <sub>8</sub> "	16'- 5 <sup>7</sup> / <sub>8</sub> "	22'- 11 <sup>5</sup> / <sub>8</sub> "
4	16'- 4 <sup>1</sup> / <sub>8</sub> "	22'- 6 <sup>3</sup> / <sub>8</sub> "	16'- 10 <sup>3</sup> / <sub>8</sub> "	23'- 3 "
5	16'- 9 <sup>1</sup> / <sub>2</sub> "	22'- 10 <sup>3</sup> / <sub>8</sub> "	17'- 4 "	23'- 7 <sup>1</sup> / <sub>4</sub> "
6	17'- 4 "	23'- 3 "	17'- 10 <sup>5</sup> / <sub>8</sub> "	24'- 0 "
7	17'- 11 <sup>1</sup> / <sub>2</sub> "	23'- 8 <sup>1</sup> / <sub>2</sub> "	18'- 6 <sup>3</sup> / <sub>8</sub> "	24'- 5 <sup>1</sup> / <sub>4</sub> "
8	18'- 7 <sup>5</sup> / <sub>8</sub> "	24'- 2 <sup>3</sup> / <sub>4</sub> "	19'- 2 <sup>3</sup> / <sub>4</sub> "	25'- 1 <sup>7</sup> / <sub>8</sub> "
9	19'- 4 <sup>1</sup> / <sub>2</sub> "	24'- 9 <sup>3</sup> / <sub>4</sub> "	20'- 0 "	25'- 7 <sup>3</sup> / <sub>8</sub> "
10	20'- 2 <sup>1</sup> / <sub>4</sub> "	25'- 5 <sup>3</sup> / <sub>8</sub> "	20'- 10 "	26'- 3 <sup>1</sup> / <sub>4</sub> "
11	21'- 3 <sup>7</sup> / <sub>8</sub> "	26'- 1 <sup>1</sup> / <sub>2</sub> "	21'- 8 <sup>1</sup> / <sub>2</sub> "	26'- 11 <sup>5</sup> / <sub>8</sub> "
12	21'- 11 "	26'- 10 <sup>1</sup> / <sub>8</sub> "	22'- 7 <sup>1</sup> / <sub>2</sub> "	27'- 8 <sup>1</sup> / <sub>2</sub> "
13	22'- 10 <sup>1</sup> / <sub>4</sub> "	27'- 7 <sup>3</sup> / <sub>8</sub> "	23'- 7 <sup>1</sup> / <sub>16</sub> "	28'- 6 <sup>1</sup> / <sub>16</sub> "
14	23'- 9 <sup>3</sup> / <sub>16</sub> "	28'- 5 "	24'- 7 "	29'- 4 "

**WIDTH OF BUILDING**

Inch Rise	33 FEET		34 FEET	
	Com.	Hip	Com.	Hip
1	16'- 6 <sup>5</sup> / <sub>8</sub> "	23'- 4 <sup>1</sup> / <sub>2</sub> "	17'- 3 <sup>3</sup> / <sub>4</sub> "	24'- 1 "
2	16'- 8 <sup>3</sup> / <sub>8</sub> "	23'- 6 "	17'- 2 <sup>3</sup> / <sub>4</sub> "	24'- 2 <sup>1</sup> / <sub>2</sub> "
3	17'- 0 "	23'- 8 <sup>1</sup> / <sub>4</sub> "	17'- 6 <sup>1</sup> / <sub>4</sub> "	24'- 4 <sup>7</sup> / <sub>8</sub> "
4	17'- 4 <sup>3</sup> / <sub>4</sub> "	23'- 11 <sup>3</sup> / <sub>4</sub> "	17'- 11 "	24'- 8 <sup>1</sup> / <sub>2</sub> "
5	17'- 10 <sup>1</sup> / <sub>2</sub> "	24'- 4 <sup>1</sup> / <sub>8</sub> "	18'- 5 "	25'- 7 <sup>7</sup> / <sub>8</sub> "
6	18'- 5 <sup>5</sup> / <sub>8</sub> "	24'- 9 "	19'- 1 <sup>7</sup> / <sub>8</sub> "	25'- 6 "
7	19'- 1 <sup>3</sup> / <sub>8</sub> "	25'- 2 <sup>7</sup> / <sub>8</sub> "	19'- 8 <sup>3</sup> / <sub>8</sub> "	26'- 1 <sup>7</sup> / <sub>8</sub> "
8	19'- 10 "	25'- 9 <sup>1</sup> / <sub>2</sub> "	20'- 5 <sup>1</sup> / <sub>8</sub> "	26'- 6 <sup>7</sup> / <sub>8</sub> "
9	20'- 7 <sup>1</sup> / <sub>2</sub> "	26'- 5 "	21'- 3 "	27'- 2 <sup>5</sup> / <sub>8</sub> "
10	21'- 5 <sup>7</sup> / <sub>8</sub> "	27'- 1 <sup>7</sup> / <sub>8</sub> "	22'- 1 <sup>1</sup> / <sub>2</sub> "	27'- 10 <sup>7</sup> / <sub>8</sub> "
11	22'- 4 <sup>3</sup> / <sub>8</sub> "	27'- 9 <sup>3</sup> / <sub>4</sub> "	23'- 7 <sup>7</sup> / <sub>8</sub> "	28'- 7 <sup>3</sup> / <sub>4</sub> "
12	23'- 4 "	28'- 6 <sup>7</sup> / <sub>8</sub> "	24'- 1 <sup>2</sup> / <sub>2</sub> "	29'- 5 <sup>1</sup> / <sub>4</sub> "
13	24'- 4 <sup>1</sup> / <sub>2</sub> "	29'- 4 <sup>5</sup> / <sub>8</sub> "	25'- 7 <sup>7</sup> / <sub>8</sub> "	30'- 3 <sup>1</sup> / <sub>4</sub> "
14	25'- 4 <sup>1</sup> / <sub>4</sub> "	30'- 3 "	26'- 1 <sup>1</sup> / <sub>2</sub> "	31'- 2 "

Inch Rise	35 FEET		36 FEET	
	Com.	Hip	Com.	Hip
1	17'- 6 <sup>3</sup> / <sub>4</sub> "	24'- 9 <sup>1</sup> / <sub>2</sub> "	18'- 3 <sup>3</sup> / <sub>4</sub> "	25'- 6 "
2	17'- 8 <sup>7</sup> / <sub>8</sub> "	24'- 11 "	18'- 2 <sup>7</sup> / <sub>8</sub> "	25'- 7 <sup>5</sup> / <sub>8</sub> "
3	18'- 1 <sup>1</sup> / <sub>2</sub> "	25'- 1 <sup>1</sup> / <sub>2</sub> "	18'- 6 <sup>5</sup> / <sub>8</sub> "	25'- 10 <sup>1</sup> / <sub>8</sub> "
4	18'- 5 <sup>3</sup> / <sub>8</sub> "	25'- 5 <sup>1</sup> / <sub>4</sub> "	18'- 11 <sup>7</sup> / <sub>8</sub> "	26'- 1 <sup>7</sup> / <sub>8</sub> "
5	18'- 11 <sup>1</sup> / <sub>2</sub> "	25'- 9 <sup>3</sup> / <sub>4</sub> "	19'- 6 "	26'- 6 <sup>5</sup> / <sub>8</sub> "
6	19'- 6 <sup>7</sup> / <sub>8</sub> "	26'- 3 "	20'- 1 <sup>1</sup> / <sub>2</sub> "	27'- 0 "
7	20'- 3 <sup>3</sup> / <sub>8</sub> "	26'- 10 <sup>1</sup> / <sub>4</sub> "	20'- 10 <sup>1</sup> / <sub>4</sub> "	27'- 6 <sup>1</sup> / <sub>2</sub> "
8	21'- 3 <sup>7</sup> / <sub>8</sub> "	27'- 4 <sup>1</sup> / <sub>4</sub> "	21'- 7 <sup>1</sup> / <sub>2</sub> "	28'- 1 <sup>5</sup> / <sub>8</sub> "
9	21'- 10 <sup>1</sup> / <sub>2</sub> "	28'- 1 <sup>1</sup> / <sub>4</sub> "	22'- 6 "	28'- 9 <sup>3</sup> / <sub>4</sub> "
10	22'- 9 <sup>3</sup> / <sub>8</sub> "	28'- 8 <sup>3</sup> / <sub>4</sub> "	23'- 5 <sup>1</sup> / <sub>8</sub> "	29'- 6 <sup>5</sup> / <sub>8</sub> "
11	23'- 8 <sup>7</sup> / <sub>8</sub> "	29'- 5 <sup>7</sup> / <sub>8</sub> "	24'- 5 "	30'- 4 "
12	24'- 9 "	30'- 3 <sup>3</sup> / <sub>8</sub> "	25'- 5 <sup>1</sup> / <sub>2</sub> "	31'- 2 "
13	25'- 9 <sup>3</sup> / <sub>4</sub> "	31'- 1 <sup>7</sup> / <sub>8</sub> "	26'- 6 <sup>5</sup> / <sub>8</sub> "	32'- 5 <sup>5</sup> / <sub>8</sub> "
14	26'- 10 <sup>3</sup> / <sub>4</sub> "	32'- 1 "	27'- 7 <sup>7</sup> / <sub>8</sub> "	33'- 0 "

### WIDTH OF BUILDING

Inch Rise	37 FEET		38 FEET	
	Com.	Hip	Com.	Hip
1	18'- 6 <sup>3</sup> / <sub>4</sub> "	26'- 2 <sup>1</sup> / <sub>2</sub> "	19'- 3 <sup>1</sup> / <sub>4</sub> "	26'- 11" "
2	18'- 9" "	26'- 4 <sup>1</sup> / <sub>8</sub> "	19'- 3" "	27'- 3 <sup>1</sup> / <sub>4</sub> "
3	19'- 3 <sup>1</sup> / <sub>4</sub> "	26'- 6 <sup>3</sup> / <sub>4</sub> "	19'- 7" "	27'- 3 <sup>3</sup> / <sub>8</sub> "
4	19'- 6 <sup>1</sup> / <sub>8</sub> "	26'- 10 <sup>5</sup> / <sub>8</sub> "	20'- 3 <sup>1</sup> / <sub>8</sub> "	27'- 7 <sup>3</sup> / <sub>8</sub> "
5	20'- 1 <sup>1</sup> / <sub>2</sub> "	27'- 3 <sup>1</sup> / <sub>2</sub> "	20'- 7" "	28'- 3 <sup>1</sup> / <sub>8</sub> "
6	20'- 8 <sup>1</sup> / <sub>4</sub> "	27'- 9" "	21'- 3" "	28'- 6" "
7	21'- 5 <sup>1</sup> / <sub>4</sub> "	28'- 3 <sup>5</sup> / <sub>8</sub> "	22'- 1 <sup>1</sup> / <sub>8</sub> "	29'- 7 <sup>1</sup> / <sub>8</sub> "
8	22'- 2 <sup>3</sup> / <sub>8</sub> "	28'- 11" "	22'- 10" "	29'- 8 <sup>1</sup> / <sub>2</sub> "
9	23'- 1 <sup>1</sup> / <sub>2</sub> "	29'- 7 <sup>3</sup> / <sub>8</sub> "	23'- 9" "	30'- 5" "
10	24'- 1" "	30'- 4 <sup>1</sup> / <sub>2</sub> "	24'- 8 <sup>3</sup> / <sub>4</sub> "	31'- 2 <sup>3</sup> / <sub>8</sub> "
11	25'- 1 <sup>1</sup> / <sub>8</sub> "	31'- 2 <sup>1</sup> / <sub>8</sub> "	25'- 9 <sup>3</sup> / <sub>8</sub> "	32'- 1 <sup>1</sup> / <sub>8</sub> "
12	26'- 2" "	32'- 3 <sup>1</sup> / <sub>8</sub> "	26'- 10 <sup>1</sup> / <sub>2</sub> "	32'- 10 <sup>7</sup> / <sub>8</sub> "
13	27'- 3 <sup>1</sup> / <sub>2</sub> "	32'- 11 <sup>1</sup> / <sub>4</sub> "	28'- 3 <sup>1</sup> / <sub>8</sub> "	33'- 10" "
14	28'- 5 <sup>1</sup> / <sub>8</sub> "	33'- 11" "	29'- 2 <sup>3</sup> / <sub>8</sub> "	34'- 10" "

Inch Rise	39 FEET		40 FEET	
	Com.	Hip	Com.	Hip
1	19'- 6 <sup>3</sup> / <sub>4</sub> "	27'- 7 <sup>1</sup> / <sub>2</sub> "	20'- 3 <sup>1</sup> / <sub>4</sub> "	28'- 4" "
2	19'- 9 <sup>1</sup> / <sub>8</sub> "	27'- 9 <sup>1</sup> / <sub>4</sub> "	20'- 3 <sup>3</sup> / <sub>4</sub> "	28'- 5 <sup>3</sup> / <sub>4</sub> "
3	20'- 1 <sup>1</sup> / <sub>8</sub> "	28'- 0" "	20'- 7 <sup>3</sup> / <sub>8</sub> "	28'- 6 <sup>5</sup> / <sub>8</sub> "
4	20'- 6 <sup>3</sup> / <sub>4</sub> "	28'- 4 <sup>1</sup> / <sub>8</sub> "	21'- 1" "	29'- 3 <sup>1</sup> / <sub>4</sub> "
5	21'- 1 <sup>1</sup> / <sub>2</sub> "	28'- 9 <sup>1</sup> / <sub>4</sub> "	21'- 8" "	29'- 6" "
6	21'- 9 <sup>3</sup> / <sub>4</sub> "	29'- 3" "	22'- 4 <sup>3</sup> / <sub>8</sub> "	30'- 0" "
7	22'- 7 <sup>1</sup> / <sub>8</sub> "	29'- 10" "	23'- 2" "	30'- 7 <sup>1</sup> / <sub>4</sub> "
8	23'- 5 <sup>1</sup> / <sub>4</sub> "	30'- 5 <sup>7</sup> / <sub>8</sub> "	24'- 3 <sup>1</sup> / <sub>8</sub> "	31'- 3 <sup>1</sup> / <sub>4</sub> "
9	24'- 4 <sup>1</sup> / <sub>2</sub> "	31'- 2 <sup>5</sup> / <sub>8</sub> "	25'- 0" "	32'- 1 <sup>1</sup> / <sub>4</sub> "
10	25'- 4 <sup>5</sup> / <sub>8</sub> "	32'- 1 <sup>1</sup> / <sub>4</sub> "	26'- 3 <sup>1</sup> / <sub>8</sub> "	32'- 10 <sup>1</sup> / <sub>8</sub> "
11	26'- 5 <sup>1</sup> / <sub>2</sub> "	32'- 10 <sup>1</sup> / <sub>4</sub> "	27'- 1 <sup>5</sup> / <sub>8</sub> "	33'- 8 <sup>3</sup> / <sub>8</sub> "
12	27'- 7" "	33'- 9 <sup>1</sup> / <sub>4</sub> "	28'- 3 <sup>3</sup> / <sub>8</sub> "	34'- 7 <sup>5</sup> / <sub>8</sub> "
13	28'- 9 <sup>1</sup> / <sub>4</sub> "	34'- 8 <sup>5</sup> / <sub>8</sub> "	29'- 6" "	35'- 7 <sup>3</sup> / <sub>8</sub> "
14	29'- 11 <sup>5</sup> / <sub>8</sub> "	35'- 9" "	30'- 8 <sup>7</sup> / <sub>8</sub> "	36'- 8" "

### AMOUNT TO ADD TO COMMON RAFTER FOR 1 TO 11 INCHES IN BUILDING WIDTH

Rise	1	2	3	4	5	6	7	8	9	10	11
1											
2	1/2	1	1 1/2	2	2 1/2	3 1/8	3 5/8	4 1/8	4 5/8	5 1/8	5 5/8
3											
4	5/8	1 1/8	1 5/8	2 1/8	2 5/8	3 1/4	3 3/4	4 1/4	4 3/4	5 1/4	5 7/8
5	5/8	1 1/8	1 5/8	2 1/4	2 3/4	3 1/4	3 3/4	4 3/8	4 7/8	5 3/8	5 7/8
6	5/8	1 1/8	1 5/8	2 1/4	2 3/4	3 1/4	3 3/4	4 3/8	4 7/8	5 3/8	6
7	5/8	1 1/8	1 5/8	2 3/8	3	3 1/2	4	4 5/8	5 1/4	5 3/4	6 3/8
8	5/8	1 1/4	1 7/8	2 1/2	3 1/8	3 3/4	4 1/8	4 3/4	5 1/2	6	6 5/8
9	5/8	1 1/4	1 7/8	2 1/2	3 1/8	3 3/4	4 1/8	4 3/4	5 1/2	6	6 5/8
10	5/8	1 3/8	2	2 5/8	3 1/4	3 7/8	4 1/2	5 3/8	5 7/8	6 1/2	7 1/8
11	3/4	1 3/8	2	2 3/4	3 1/2	4 1/4	4 3/4	5 5/8	6 1/8	6 3/4	7 1/2
12	3/4	1 3/8	2 1/8	2 3/4	3 1/2	4 1/4	5	5 5/8	6 3/8	7	7 3/4
13	3/4	1 1/2	2 1/4	3	3 5/8	4 3/8	5 1/8	6	6 5/8	7 3/8	8 1/8
14	3/4	1 5/8	2 3/8	3 1/8	3 7/8	4 5/8	5 3/8	6 1/4	6 7/8	7 3/4	8 1/2
15	3/4	1 5/8	2 3/8	3 1/4	4	4 3/4	5 5/8	6 1/2	7 1/4	8	8 3/4
16	7/8	1 3/4	2 1/2	3 3/8	4 1/8	5	5 3/4	6 5/8	7 1/2	8 1/4	9 1/8
17	7/8	1 3/4	2 1/2	3 1/2	4 1/4	5 1/8	6	7	7 3/4	8 5/8	9 1/2
18	7/8	1 3/4	2 3/4	3 5/8	4 1/2	5 1/2	6 3/8	7 1/4	8 1/8	9	10
19	1	1 7/8	2 3/4	3 3/4	4 5/8	5 1/2	6 1/2	7 1/4	8 3/8	9 3/8	10 1/4
20	1	2	3	4	5	5 7/8	6 3/4	7 3/4	8 3/4	9 3/4	10 5/8
21	1	2	3	4	5	6	7	8	9	10 1/8	11 1/8
22	1	2	3 1/8	4 1/8	5 1/8	6 1/4	7 1/4	8 3/8	9 3/8	10 3/8	11 1/2
23	1 1/8	2 1/8	3 1/4	4 1/4	5 3/8	6 1/2	7 1/2	8 5/8	9 3/4	10 3/4	11 7/8
24	1 1/8	2 1/4	3 3/8	4 1/2	5 5/8	6 3/4	7 7/8	9	10	11 1/4	12 3/8
26	1 1/4	2 3/8	3 1/2	4 3/4	6	7 1/8	8 3/8	9 1/2	10 3/4	11 7/8	13 1/8
28	1 1/4	2 1/2	3 7/8	5 1/8	6 3/8	7 5/8	8 7/8	10 1/8	11 1/2	12 3/4	14
30	1 3/8	2 5/8	4	5 3/8	6 3/4	8	9 1/2	10 3/4	12 1/8	13 1/2	14 3/4

TO FIGURE UNLISTED RISE TAKE 1/2 DIFFERENCE OF NUMBER OVER & NUMBER UNDER EXAMPLE: 27" RISE 9" WIDTH. 10 3/4" TO 11 1/2" = 3/8". ADDED TO SMALLER NUMBER = 11 1/8".

**AMOUNT TO ADD TO HIP-VAL RAFTER  
FOR 1 TO 11 INCHES IN BUILDING WIDTH**

Rise	1	2	3	4	5	6	7	8	9	10	11
1	3/4	1 1/8	2 1/8	2 7/8	3 1/2	4 1/4	4 7/8	5 5/8	6 3/8	7	7 3/4
2	3/4	1 1/8	2 1/8	2 7/8	3 1/2	4 1/4	5	5 3/4	6 1/2	7 1/8	7 7/8
3	3/4	1 3/8	2 1/8	2 7/8	3 3/8	4 3/8	5	5 3/4	6 1/2	7 1/4	7 7/8
4	3/4	1 3/8	2 1/4	3	3 5/8	4 3/8	5 1/8	5 7/8	6 1/2	7 1/4	8
5	3/4	1 1/2	2 1/4	3	3 3/4	4 1/2	5 1/4	6	6 3/4	7 1/2	8 1/4
6	3/4	1 1/2	2 1/4	3	3 3/4	4 1/2	5 1/4	6	6 3/4	7 1/2	8 1/4
7	3/4	1 1/2	2 1/4	3	3 3/4	4 1/2	5 1/4	6	6 3/4	7 1/2	8 1/4
8	3/4	1 1/2	2 3/8	3 1/8	3 7/8	4 3/4	5 1/2	6 1/4	7	7 3/4	8 5/8
9	3/4	1 1/2	2 3/8	3 1/4	4	4 3/4	5 5/8	6 3/8	7 1/4	8	8 7/8
10	7/8	1 5/8	2 1/2	3 3/8	4 1/8	4 7/8	5 3/4	6 5/8	7 3/8	8 1/4	9
11	7/8	1 3/4	2 1/2	3 3/8	4 1/4	5	5 7/8	6 7/8	7 1/2	8 3/8	9 1/4
12	7/8	1 3/4	2 5/8	3 1/2	4 3/8	5 1/4	6	6 7/8	7 3/4	8 5/8	9 1/2
13	7/8	1 3/4	2 5/8	3 5/8	4 1/2	5 3/8	6 3/8	7 1/4	7 7/8	8 7/8	9 3/4
14	7/8	1 7/8	2 3/4	3 5/8	4 5/8	5 1/2	6 3/8	7 3/8	8 1/4	9 1/4	10 1/8
15	1	2	2 7/8	3 7/8	4 3/4	5 3/4	6 3/8	7 1/2	8 1/2	9 1/2	10 3/8
16	1	2	3	4	5	5 7/8	6 3/4	7 3/4	8 3/4	9 3/4	10 5/8
17	1	2	3	4	5	6	7	8	9	10	11
18	1	2	3	4	5 1/8	6 1/8	7 1/4	8 1/4	9 1/4	10 3/8	11 3/8
19	1	2 1/8	3 1/4	4 1/4	5 1/4	6 3/8	7 3/8	8 1/2	9 1/2	10 5/8	11 3/4
20	1 1/8	2 1/4	3 3/4	4 3/8	5 1/2	6 1/2	7 5/8	8 3/4	9 7/8	10 7/8	12
21	1 1/8	2 1/4	3 3/8	4 1/2	5 5/8	6 3/4	7 7/8	9	10 1/8	11 1/4	12 3/8
22	1 1/4	2 3/8	3 1/2	4 5/8	5 7/8	7	8 1/8	9 1/4	10 3/8	11 5/8	12 3/4
23	1 1/4	2 3/8	3 1/2	4 3/4	6	7 1/4	8 3/8	9 3/8	10 3/4	11 7/8	13 1/8
24	1 1/4	2 1/2	3 5/8	4 7/8	6 1/8	7 3/8	8 1/2	9 3/4	11	12 1/4	13 1/2
26	1 1/4	2 5/8	3 7/8	5 1/4	6 1/2	7 3/4	9	10 3/8	11 5/8	12 7/8	14 1/4
28	1 3/8	2 3/4	4 1/8	5 1/2	6 7/8	8 1/8	9 1/2	10 7/8	12 1/4	13 5/8	15
30	1 1/2	2 7/8	4 1/4	5 3/4	7 1/8	8 5/8	10	11 1/2	13	14 3/8	15 3/4

TO FIGURE UNLISTED RISE TAKE 1/2 DIFFERENCE OF NUMBER OVER & NUMBER UNDER. EXAMPLE 25" RISE 7" WIDTH. 8 1/2" TO 9" = 1/2". ADDED TO SMALLER NUMBER = 8 3/4".

**DIFFERENCE IN LENGTH OF JACK  
RAFTERS OF VARIOUS SPACING**

Rise	16"	18"	20"	24"
1	1'- 4 1/16"	1'- 6 1/8"	1'- 8 1/8"	2'- 1/8"
2	1'- 4 1/4"	1'- 6 1/4"	1'- 8 1/4"	2'- 3/8"
3	1'- 4 1/2"	1'- 6 1/2"	1'- 8 3/8"	2'- 3/4"
4	1'- 4 7/8"	1'- 7 "	1'- 9 1/8"	2'- 1 3/8"
5	1'- 5 3/8"	1'- 7 1/2"	1'- 9 3/8"	2'- 2 "
6	1'- 5 7/8"	1'- 8 1/8"	1'- 10 3/8"	2'- 2 7/8"
7	1'- 6 1/2"	1'- 8 7/8"	1'- 11 1/8"	2'- 3 1/8"
8	1'- 7 1/4"	1'- 9 5/8"	2'- 0 "	2'- 4 7/8"
9	1'- 8 "	1'- 10 1/2"	2'- 1 "	2'- 6 "
10	1'- 8 7/8"	1'- 11 3/8"	2'- 2 "	2'- 7 1/4"
11	1'- 9 3/4"	2'- 3/8"	2'- 3 1/8"	2'- 8 3/8"
12	1'- 10 5/8"	2'- 1 1/2"	2'- 4 1/4"	2'- 10 "
13	1'- 11 5/8"	2'- 2 1/2"	2'- 5 1/2"	2'- 11 3/8"
14	2'- 1/2"	2'- 3 5/8"	2'- 6 3/4"	3'- 7/8"
15	2'- 1 5/8"	2'- 4 3/4"	2'- 8 "	3'- 2 3/8"
16	2'- 2 3/8"	2'- 6 "	2'- 9 3/8"	3'- 4 "
17	2'- 3 1/4"	2'- 7 1/4"	2'- 10 3/4"	3'- 5 5/8"
18	2'- 4 7/8"	2'- 8 1/2"	3'- 0 "	3'- 7 1/4"
19	2'- 6 "	2'- 9 3/4"	3'- 1 1/2"	3'- 9 "
20	2'- 7 1/8"	2'- 11 "	3'- 2 7/8"	3'- 10 5/8"
21	2'- 8 1/4"	3'- 1/4"	3'- 4 1/4"	4'- 3/8"
22	2'- 9 3/8"	3'- 1 5/8"	3'- 5 3/4"	4'- 2 1/8"
23	2'- 10 5/8"	3'- 3 "	3'- 7 1/4"	4'- 3 7/8"
24	2'- 11 3/4"	3'- 4 1/4"	3'- 8 3/4"	4'- 5 5/8"
26	3'- 2 1/4"	3'- 7 "	3'- 11 7/8"	4'- 9 3/8"
28	3'- 4 1/2"	3'- 9 3/4"	4'- 2 3/4"	5'- 7/8"
30	3'- 7 "	4'- 1/2"	4'- 5 7/8"	5'- 4 5/8"

**SWANSON SPEED® SQUARE  
TOOL POUCH**



Tools not included

Item #T0104

- Heavy 8 oz. Top Grain Cowhide Leather - All capped rivets.
- A pouch for the tools you always need, at your side.
- Pocket for Swanson Speed® square.
- Large hammer loop.
- Tape pocket for 25' x 1" tape.
- Ideal for home projects and tradesman on the job.

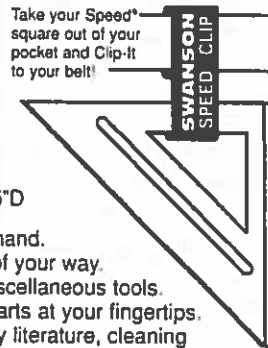
**Small  
Speed®  
Clip**



Item #T0120

4.625"H x 1"W x .75"D

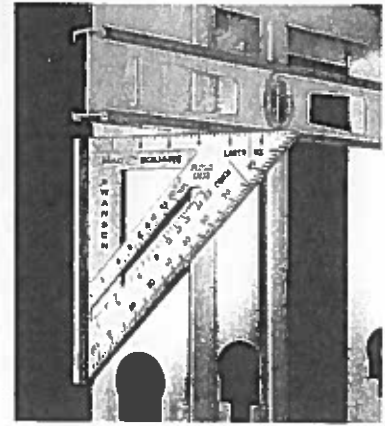
- Keep Speed® Square at hand.
- Holds electric cords out of your way.
- Carry rope, cable and miscellaneous tools.
- Hold container of small parts at your fingertips.
- Attach plastic bag to carry literature, cleaning supplies, etc.



Take your Speed® square out of your pocket and Clip-it to your belt!

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**SWANSON > MAG <® SQUARE**

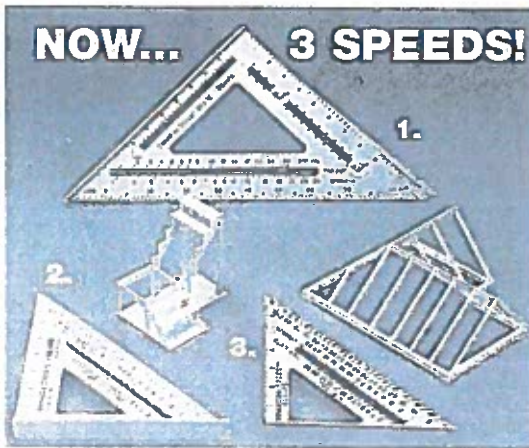


- An "extra hand" for leveling, measuring or layout. Stick it to a stud. Hang a plumb line from it. Rest your level on it. Hook the end of your tape to it.
- Full 10-5/8 sq. in. magnetic surface holds on edge and face of material.
- Two *laser marks* for use with square on a stud or on the floor.
- Use it as a protractor, try, miter or framing square.
- Handles both wood and metal framing.
- Wide back marks both edge and face of material at once.
- Strong aluminum alloy 3/16" thick.

Item # S0114

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## NOW... 3 SPEEDS!

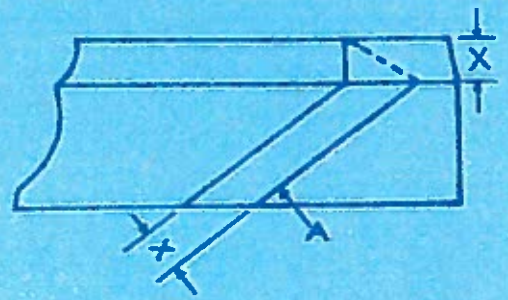


1. "BIG 12" square: aluminum alloy, 5-in-1 tool for builder or hobbyist. Ideal for rafters, stairways and general layout. 12"x12"x17" fits in tool box. Adjusts to crooked corners. "Blue Book" included.  
Item # S0107
2. SPEEDLITE square: durable polypropylene, flexible to bend in back pocket. Center finder, ideal saw guide, raised wear rim: 8"x8"x11½" with all features of original Swanson Speed square.  
Item # T0112
3. SWANSON SPEED square: aluminum alloy, 7"x7"x10" pocket sized wood-working square for professional or handyman. Ideal saw guide. Smooth, polished surface. "Blue Book" included.  
Item # S010\*

**SWANSON**  
Since 1925

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#### MARKING EDGE OR SIDE CUT

First, mark the proper PLUMB CUT (A)  
At right angles to plumb mark, measure a distance equal to thickness of rafter (X) and mark another plumb line From this plumb line, square across top edge of rafter. Dotted line connects two points, and gives SIDE CUT. This would be the method used for "hand sawing". When using the electric saw, tilt the saw to cut a 45° angle, then cut along the plumb mark. Lay out and cut one rafter, and use it as a pattern to mark the rest.

**Swanson Tool Company, Inc.**

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Item # 00101

