

**MARTINDALE'S**  
**BEVEL ANGLES**  
**BINS-TOWERS-HIP & VALLEY ROOFS**

**BEVEL ANGLES**

FOR THREE DIMENSIONAL CONNECTIONS

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**TAPERED BIN, HOPPER & TOWER CORNER ANGLES**

DIAGRAMS FOR QUICK SOLUTIONS  
FORMULAS FOR SPECIAL CONDITIONS

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**HIP & VALLEY ROOF FRAMING CONNECTIONS**

SKETCHES TO LOCATE BEVEL ANGLES REQUIRED  
FORMULAS FOR BEVEL ANGLES

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**ANALYTIC PROOF OF FORMULAS**

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# TABLES OF HIP & VALLEY BEVEL CONNECTION ANGLES

BY

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REGISTERED PROFESSIONAL ENGINEER

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## PREFACE

There is a scarcity of information relating to the solution of three dimensional angles as required for bevel corner angles for tapered bins, hoppers, chutes, towers, spires, masts and other tapered structures, and for hip and valley roof framing angles, and practically no prepared tables for ready reference

This book is designed to supply such information and to present the subject briefly and concisely and to publish for the first time diagrams and tables of beveled angles that will supply a considerable portion of such angles without computation. Formulas are given for angles not previously included, and new formulas for hip and valley framing angles easier to use.

## GENERAL NOTES

Bevel corner angles for tapered bins, hoppers, chutes, towers and other tapered structures are dealt with in Part I and hip and valley roof framing angles in Part II.

PART I provides diagrams and formulas for finding the pitch of the bevel corner angles for tapered bins, hoppers, chutes, towers, spires, masts and other similar structures. The diagrams furnish the bevel corner angle directly from the side slopes for rectangular bins, hoppers, etc. The formulas provide the means of finding the bevel corner angle for any shaped structure.

PART II provides sketches of various roof arrangements, sketches of typical hip and valley roof framing connections, formulas for finding the horizontal position of the hip or valley, formulas for the hip and valley roof framing angles, tables of hip and valley roof framing angles for various roof slopes and hip or valley positions and analytic proof of the formulas given.

The sketch of various hip and valley roof arrangements indicate the value of the horizontal locating angle for hip and valleys for different combinations of roof slopes and intersecting angles.

The sketches of typical hip and valley roof framing connections illustrate typical purlin and rafter connections and locate the several bevel framing angles used for making such connections, including angles for cuts, clearance, locating from top or bottom of purlin and other required triangulation.

The tables of hip and valley framing angles are given for 23 roof slopes, the even inch pitch roof slopes of vertical and horizontal pitch. For each roof slope the pitches of the twelve framing angles are given at even degree positions of the hip or valley, as indicated by 51 positions of the locating angle  $D$  from  $20^\circ$  to  $70^\circ$ . The pitches are given to the nearest  $1/32''$  of pitch. This arrangement given the pitches close enough together so that the pitch for any intermediate position of the hip or valley can be found by interpolation, for the slopes given.

The formulas are given for the bevel framing angles for the solution of the angles for roof slopes not included in the tables.

Analytic proof of the formulas are given for students and others interested, as the formulas are new. These formulas are based upon the roof slope and the horizontal angles between the ridge and valley, for valley framing angles, and between the hip and eave for hip framing angles.

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## PART I

### Beveled Corner Angles

#### Tapered Bins, Hoppers, Chutes, Towers, Spires, Masts, Etc.

#### USE OF DIAGRAMS

There are three diagrams covering the full range of slope combinations for rectangular tapered bins, hoppers, chutes, towers, etc., that is, for corners square in plan or horizontal section. The Typical Bin Sketch shown on the following page indicates the slope combinations covered by each diagram.

For a particular problem select the diagram that includes sides with slopes corresponding to your problem. It is only necessary to find the correct pitch for one side along the side edge of the diagram, and follow the line to the intersection of the pitch line at the top of the diagram for the other side, and at that point of intersection, the curves show the pitch of the resulting corner angle. The examples given on the page opposite each diagram outlines the procedure more in detail.

All pitch lines are shown at 1/8" intervals. The pitch to the nearest 1/16" of pitch can be read by interpolation.

Note that the diagrams are for corners SQUARE IN PLAN only. To find the bevel of corners where the sloping sides meet in an acute or obtuse angle in plan, see formulas [page 15](#).

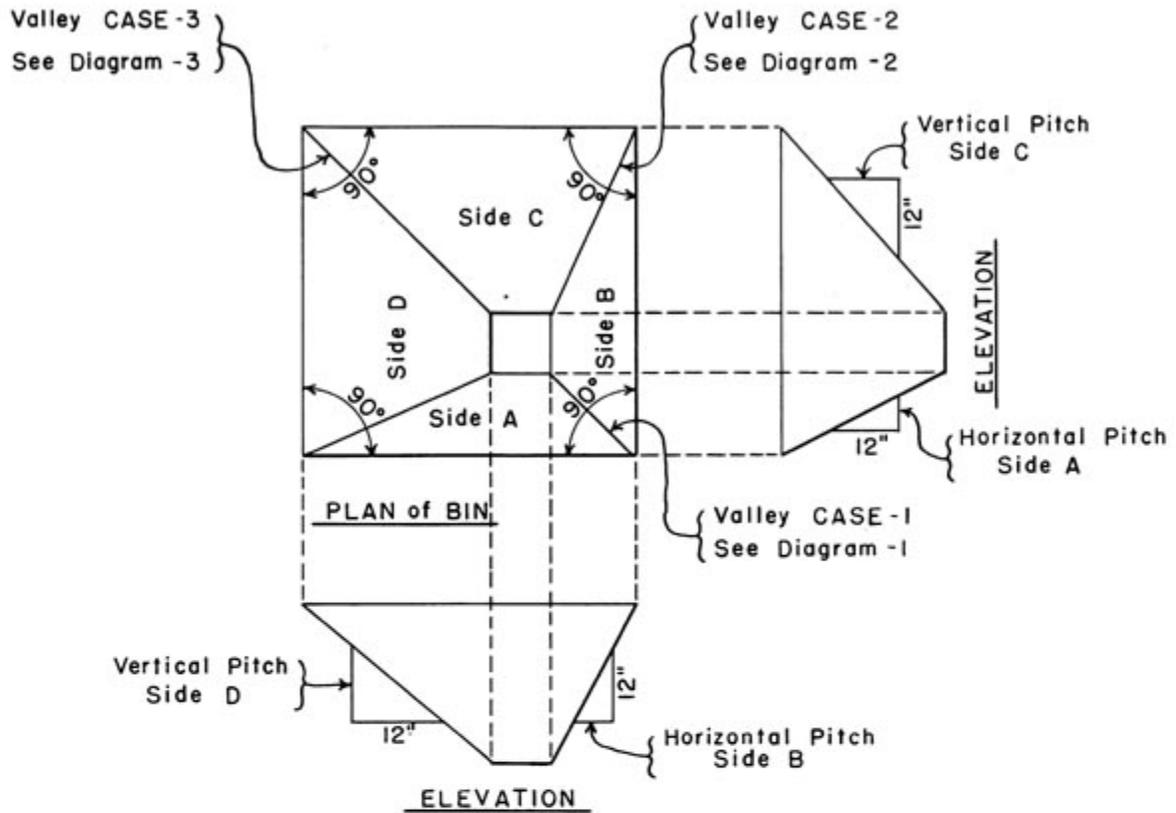
Note that the bevel of the corner for any two slopes is the same whether they meet right or left hand to the examples given.

Hip corners for tapered towers can be found in the same manner as for bins, as the corners would be the same as an inverted bin with the same slopes. Similarly the beveled corners of any tapered structure such as chutes, masts, spires and the like can be found by reference to the proper diagram.

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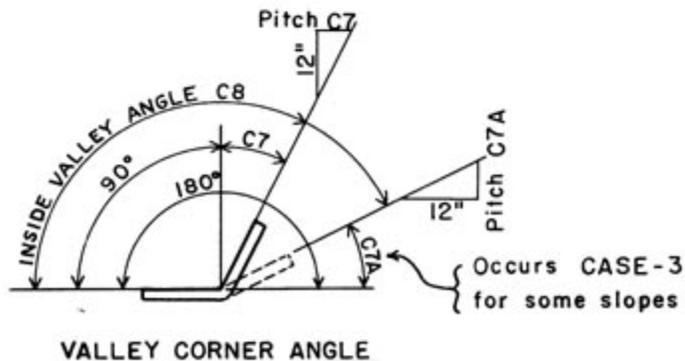
MARTINDALE'S  
**VALLEY CORNER ANGLES FOR BINS & HOPPERS**

**TYPICAL BIN SKETCH**  
 ( WITH CORNERS SQUARE IN PLAN )



**VALLEYS SHOWN FOR THREE CONDITIONS**

- CASE - 1 Slopes of both sides over 45° ( Pitches horizontal ) see Diagram - 1
  - CASE - 2 { Slope of one side over 45° ( Pitch horizontal ) } see Diagram - 2  
 { Slope of other side under 45° ( Pitch vertical ) }
  - CASE - 3 Slopes of both sides under 45° ( Pitch vertical ) see Diagram - 3
- Slopes of sides 0° to 45° from horizontal given in vertical pitch.  
 Slopes of sides 45° to 90° from horizontal given in horizontal pitch.



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EXAMPLES  
for  
DIAGRAM NO-1

**BIN PROBLEM**

Given a bin corner, square in plan, one side with 6" horizontal pitch slope, the other side with 4" horizontal pitch slope, to find the resulting bevel angle at the valley.

In diagram No. 1, select 6" pitch line on Side A, follow to the intersection with 4" pitch line from Side B. This intersection point lies between the 1 5/8" and 1 3/4" pitch line for angle C7. By interpolation the pitch to the nearest sixteenth is 1 11/16".

**TOWER PROBLEM**

Given a tapered tower, square in plan, both sides having a 2" horizontal pitch slope, to find the pitch of the resulting hip corner beveled angle.

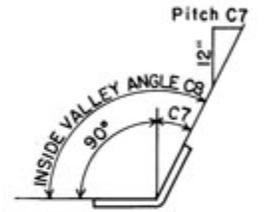
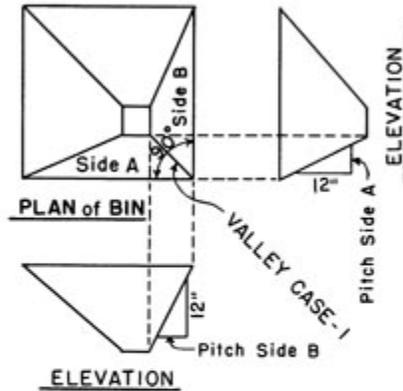
In diagram No. 1, on Side A select the 2" pitch line, follow to the intersection with the 2" pitch line from Side B. The point of intersection lies between the 1/4" and 3/8" pitch line for angle C7. By interpolation, the pitch to the nearest sixteenth is 5/16".

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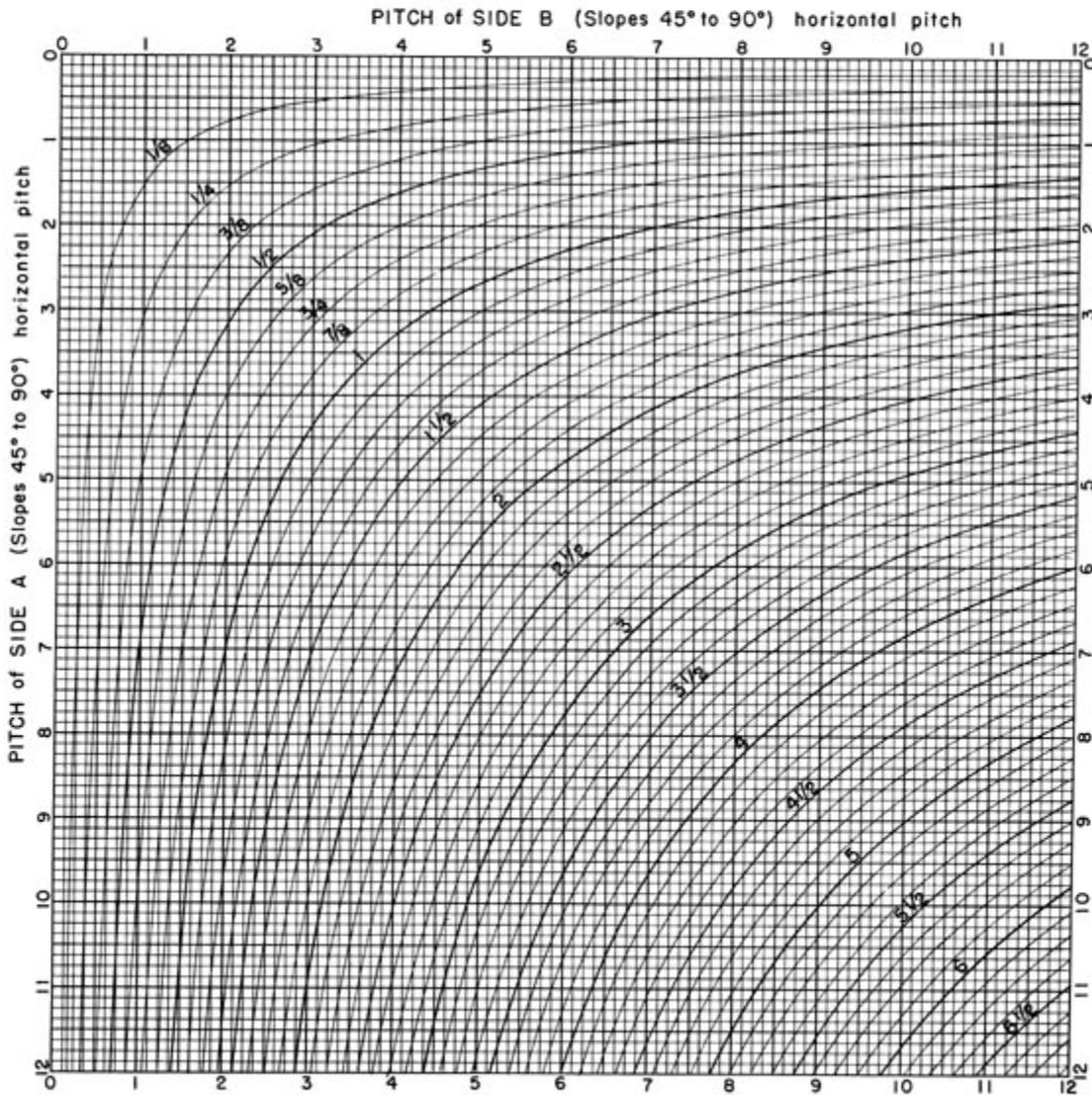
MARTINDALE'S  
**VALLEY CORNER ANGLES FOR BINS & HOPPERS**  
 CORNERS SQUARE IN PLAN

**VALLEY CONDITIONS**  
 CASE - I

- Side A Slope between 45° & 90°  
 Pitch horizontal to 12" vert.
- Side B Slope between 45° & 90°  
 Pitch horizontal to 12" vert.
- Corner angle 90° in plan.



**VALLEY CORNER ANGLE**  
 (Section normal to Valley)



**DIAGRAM NO-1**  
 CURVED LINES REPRESENT PITCH OF ANGLE C7 FOR CASE - I

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EXAMPLES  
for  
DIAGRAM NO-2

**BIN PROBLEM**

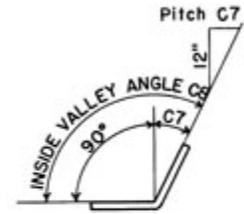
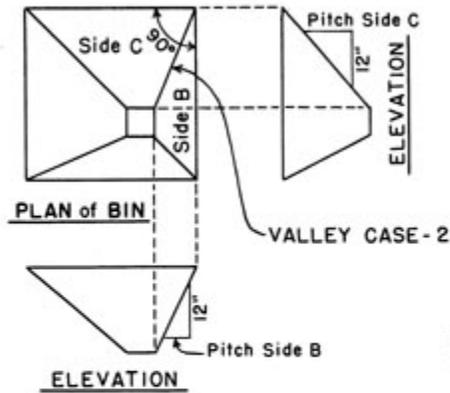
Given a bin corner, square in plan, one side with 6" horizontal pitch slope and the other side with 10" vertical pitch slope, to find the resulting bevel angle at the valley.

In diagram No. 2, note that Side B is for horizontal pitches and Side C is for vertical pitches. Select 6" line side B and follow to intersection with 10" line from side C. This intersection point lies near the 4 3/8" pitch line for the desired angle C7.

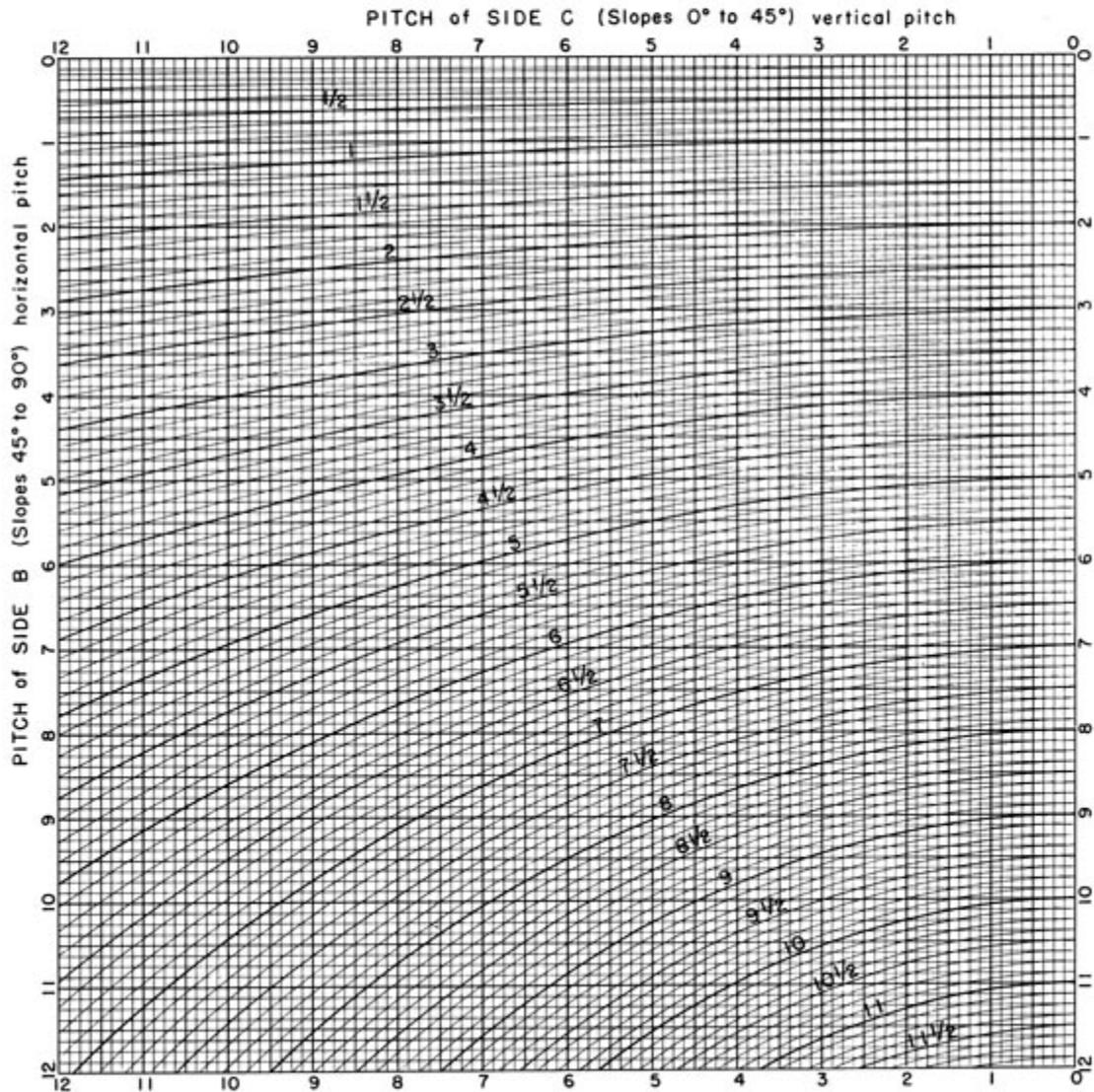
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MARTINDALE'S  
**VALLEY CORNER ANGLES FOR BINS & HOPPERS**  
 CORNERS SQUARE IN PLAN

**VALLEY CONDITIONS**  
**CASE - 2**  
 Side B Slope between 45° & 90°  
 Pitch horizontal to 12" vert.  
 Side C Slope between 0° & 45°  
 Pitch vertical to 12" horiz.  
 Corner angle 90° in plan.



**VALLEY CORNER ANGLE**  
 (Section normal to Valley)



**DIAGRAM NO-2**  
 CURVED LINES REPRESENT PITCH OF ANGLE C7

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EXAMPLES  
for  
DIAGRAM NO-2

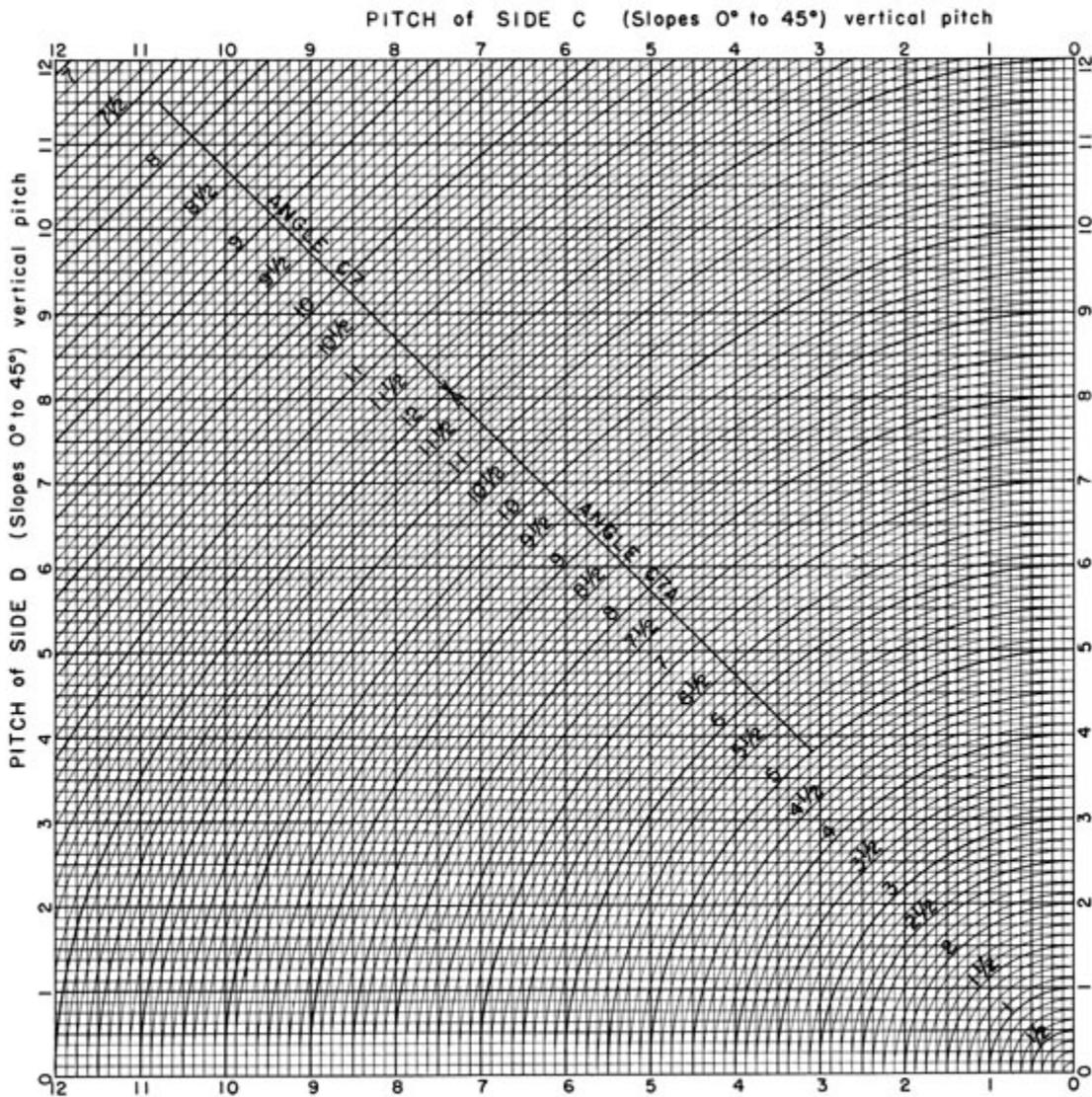
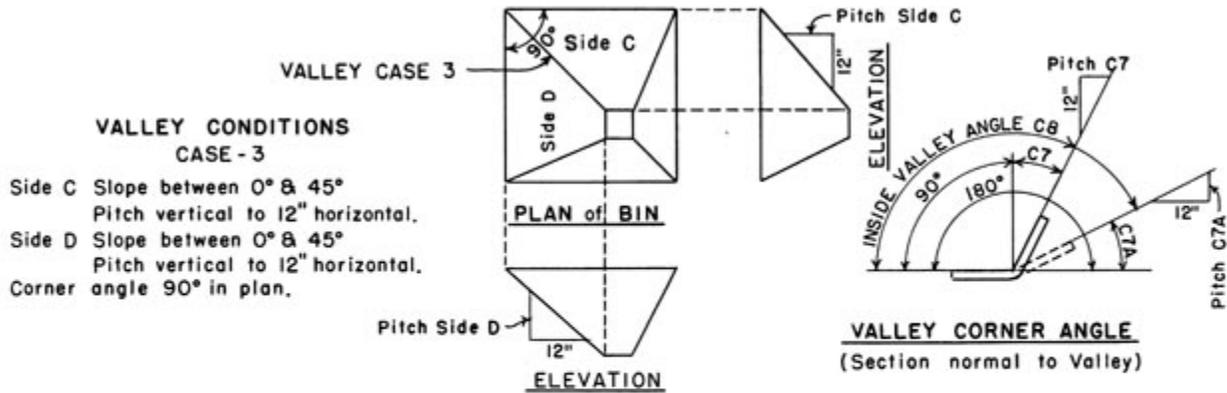
**BIN PROBLEM**

Given a bin corner, square in plan, one side with 10" vertical pitch slope and the other side with 8" vertical pitch slope, to find the resulting bevel angle at the valley.

In diagram No. 3, select the 10" line side C and follow to intersection with 8" line from side D. This intersection point lies near the 10" pitch line for the desired angle C7.

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MARTINDALE'S  
**VALLEY CORNER ANGLES FOR BINS & HOPPERS**  
 CORNERS SQUARE IN PLAN



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## PART II

### Hip & Valley Roof Framing Angles

#### COMMENT

The following Formulas, Hip and Valley Roof Arrangement Sketch, Typical Connection Sketches and Tables of Hip and Valley Framing Angles, have been prepared to assist in solving the bevel angles required for Hip and Valley roof framing as usually framed.

The Hip and Valley Roof Arrangement Sketch page 19 is to aid in finding the horizontal reference angle D used in the formulas and tables.

The Typical Connection Sketches pages 20 to 31 incl. are to aid in locating the bevel angle marks and the position of the bevel angles.

The Formulas page 18 are for solving the bevel angles not covered by the tables.

The Tables of Hip and Valley Framing Angles, pages 40 to 62 incl. are for finding the pitch of the bevel angles directly from the roof slope and horizontal reference angle D of the hip or valley, for the roof slopes included.

The Analytic Proof of the formulas, pages 32 to 37 incl. are for reference of students and others interested.

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## HIP & VALLEY ROOF FRAMING ANGLES

### USE OF SKETCHES, FORMULAS & TABLES OF ANGLES

To use the following sketches, formulas and tables of hip & valley framing angles, the user should be familiar with the arrangement of purlins and hip and valley rafters assumed as the basis of the formulas. This arrangement is described basically under "Notes on Formulas" below.

Because the formulas are based upon the roof slope and the horizontal angle between the ridge and the valley framing angles, and between the eave and the hip framing angles, the first procedure is to find this horizontal angle to degrees and minutes. This horizontal angle is marked D and is used in the formulas, sketches and tables

Sketch #1 shows several hip and valley roof arrangements and locates angle D for each arrangement. Formulas for calculating angle D from the two meeting roof slopes and the horizontal angle between the ridges for valleys, and between the eaves for hips, are given for each case.

The twelve connection sketches #2 to #13 show six pairs of hip and valley rafter connections for the same purlin. Note that channel, beam and tee purlins are shown, and that connections with clips above and below the purlin are shown so that types required for ridge and eave purlin can be selected. Connections with flange clips and bent plates are also shown. Connections using both single and multiple punching are also shown. The connections are detailed for punched and riveted work. The working points have been projected from one view to another and to a diagram of the roof, to assist in following the working points from one face to another. The small triangulation incidental to calculating the drop of hip rafters for clearance, for making cuts and for locating from top or bottom of purlin, are shown and elaborated.

The purpose of the connection sketches is to locate and orient the several bevel angles and to indicate their use for cuts, clearance, etc., as well as the bend and the bevel of the connection. Angle marks for other types of connections can be located by comparing with somewhat similar types or from the location given with the formulas.

Having located the desired angle marks the pitches can be found in the Tables of Hip & Valley Framing Angles, provided the roof slope you want is given, and by use of the formulas for other roof slopes.

### NOTES ON FORMULAS, PAGE 18

The formulas for the Hip & Valley Roof Framing Angles are based upon the roof slope and angle D. The twelve bevel angles formulated and given in the tables, cover all the bevel angles formed by two members with web and flange faces meeting in a three dimensional position from each other, when framed as follows-

1. All framing members have web and flange faces square with each other.
2. Rafter webs are in a vertical plane.

3. Rafters are parallel to hip or valley.
4. Webs of purlins are at right angles to the roof line.
5. Purlins are parallel with the ridges.
6. The ridge and eave are level.
7. Angles A and D are in a level plane.

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## M A R K S &amp; F O R M U L A S

## HIP &amp; VALLEY ROOF FRAMING CONNECTION ANGLES

S & SS = Roof Slopes

A & A' = Horizontal angles between ridges and between eaves.

D = Horizontal angles between ridge and valley or eave and hip. Marked D, D', DD & DD' for different roof arrangements shown Sketch #1.

## B E V E L C O N N E C T I O N A N G L E S

MARK	LOCATION	FORMULA
R1	Pitch of Hip or Valley Rafter.	$\tan R1 = \tan S \sin D$
R2	Angle on Hip or Valley Rafter web locating intersection of Purlin web.	$\tan R2 = \sin S \cos S \cos D \cotan D$
R3	Angle on Hip or Valley Rafter flg. locating intersection of Purlin web.	$\tan R3 = \sin S \cos S \cos D \csc R1$
P1	Angle on Purlin web, locating intersection of Hip or Valley Rafter web.	$\tan P1 = \sin S \cotan D$
P2	Angle on Purlin flg. locating intersection of Hip or Valley Rafter web.	$\tan P2 = \cos S \cotan D$
P3	Angle on Purlin web, locating intersection of Hip or Valley Rafter flg.	$\tan P3 = \cos D \sin R1 \cos R1 \sec S$
C1	Complement of the acute angle between Purlin web and Hip or Valley web.	$\tan C1 = \sin P1 \cotan S$
C2	Complement of the acute angle between Purlin web and Hip or Valley flange.	$\tan C2 = \tan R2 \cos R3$
C3	Angle between Purlin web and a plane perpendicular to both web and flange of Hip or Valley Rafter.	$\tan C3 = \cotan D \cos S$
C4	Angle on a plane perpendicular to web and flange of Hip or Valley Rafter, locating intersection of Purlin web.	$\tan C4 = \sin R1 \cotan D$
C5	Angle between Roof plane and Hip or Valley Rafter flange.	$\tan C5 = \sin R1 \cotan D$
C6	Angle between Roof plane and Hip or Valley Rafter web.	$\tan C6 = \tan D \csc R1$

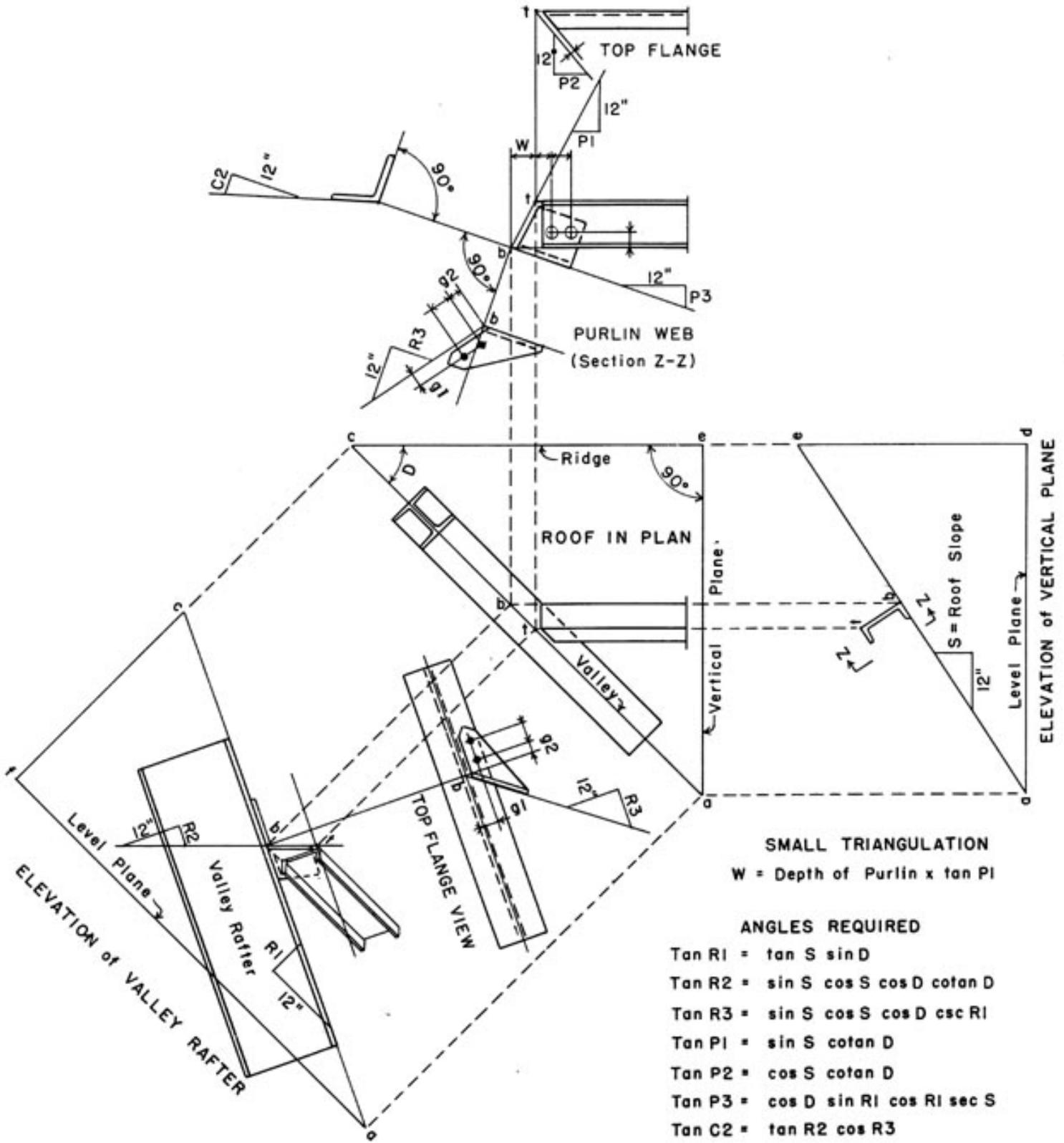
Analytic proof of formulas given on pages 32 to 37.

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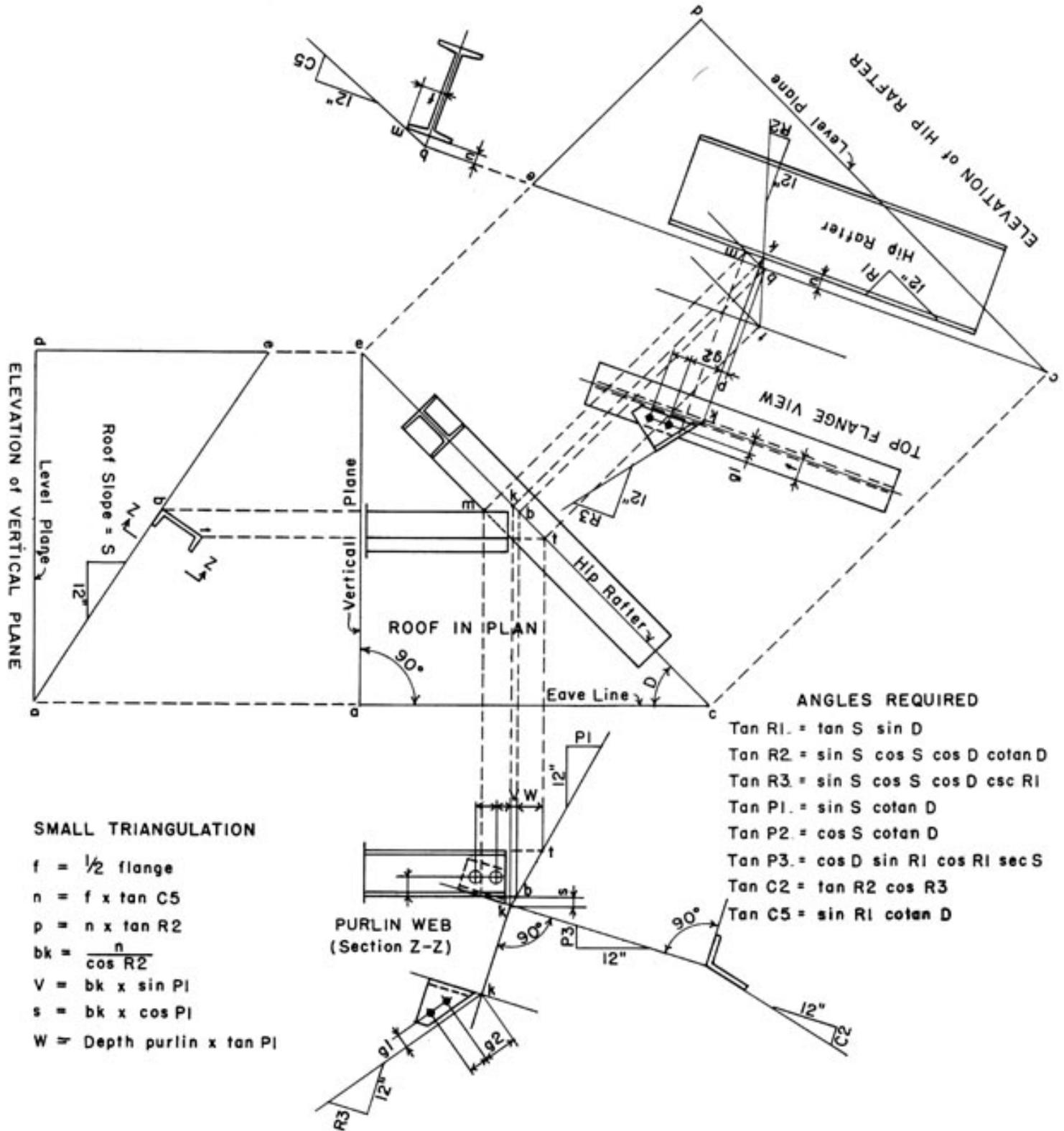
MARTINDALE'S  
**VALLEY CONNECTION SKETCH #2**

CHANNEL PURLIN — BEAM RAFTER  
 CLIP ANGLE ABOVE PURLIN



# MARTINDALE'S HIP CONNECTION SKETCH #3

CHANNEL PURLIN — BEAM RAFTER  
CLIP ANGLE ABOVE PURLIN  
RAFTER DROPPED TO CLEAR PURLIN



**SMALL TRIANGULATION**

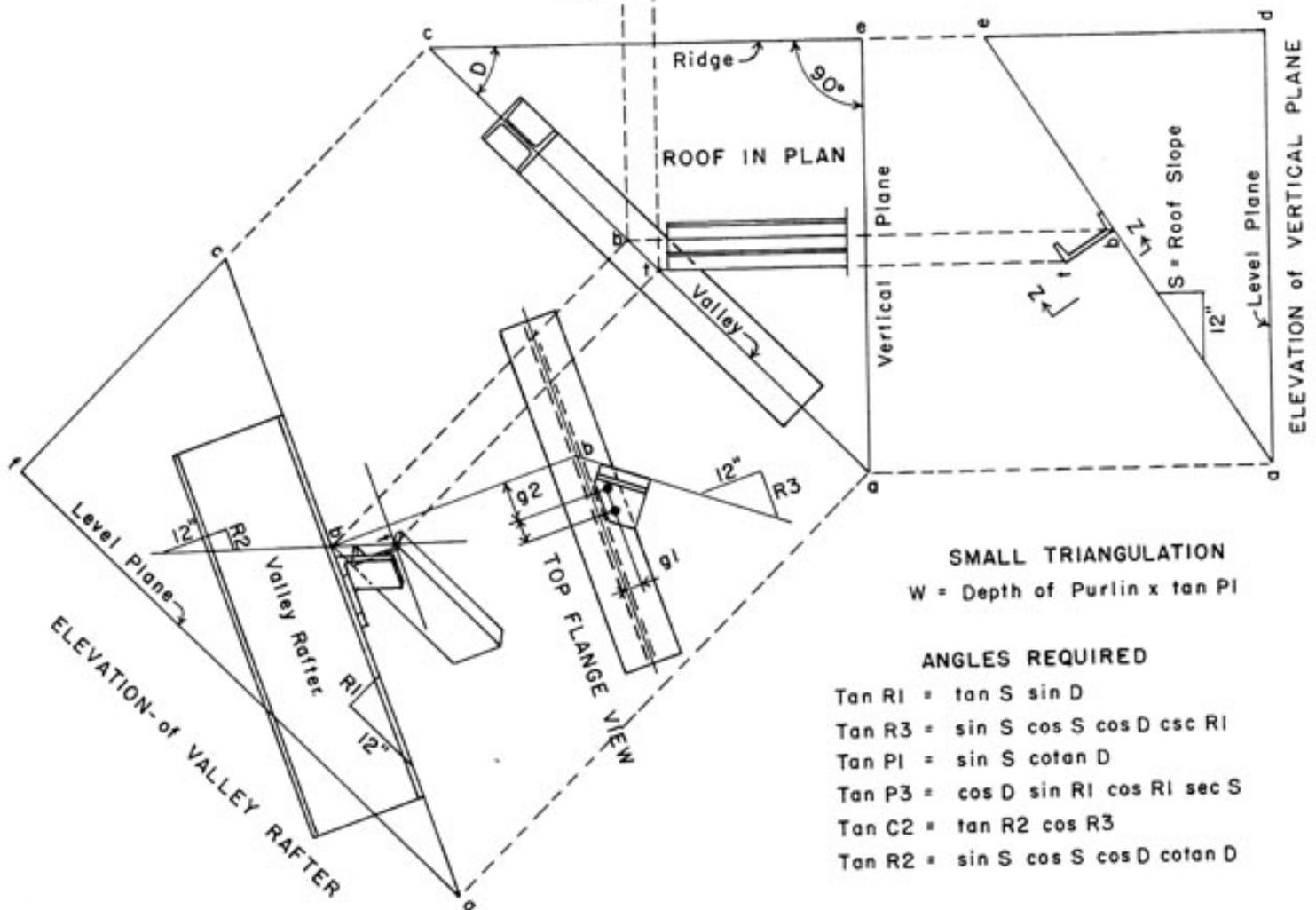
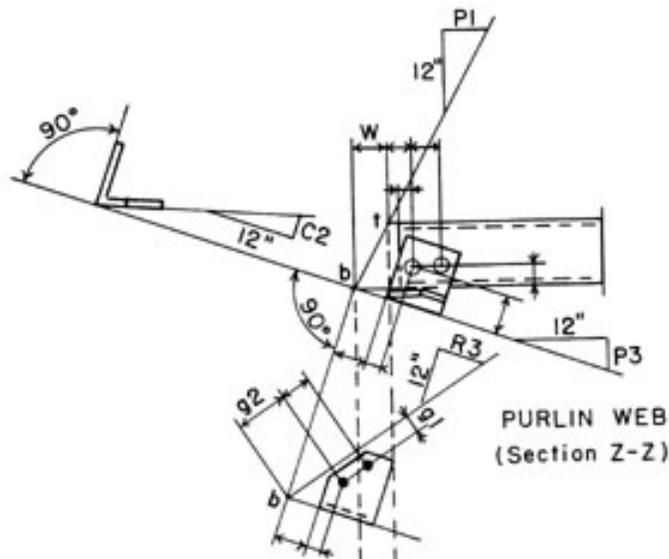
- $f = \frac{1}{2}$  flange
- $n = f \times \tan C5$
- $p = n \times \tan R2$
- $bk = \frac{n}{\cos R2}$
- $V = bk \times \sin P1$
- $s = bk \times \cos P1$
- $W = \text{Depth purlin} \times \tan P1$

**ANGLES REQUIRED**

- $\tan R1 = \tan S \sin D$
- $\tan R2 = \sin S \cos S \cos D \cotan D$
- $\tan R3 = \sin S \cos S \cos D \csc R1$
- $\tan P1 = \sin S \cotan D$
- $\tan P2 = \cos S \cotan D$
- $\tan P3 = \cos D \sin R1 \cos R1 \sec S$
- $\tan C2 = \tan R2 \cos R3$
- $\tan C5 = \sin R1 \cotan D$

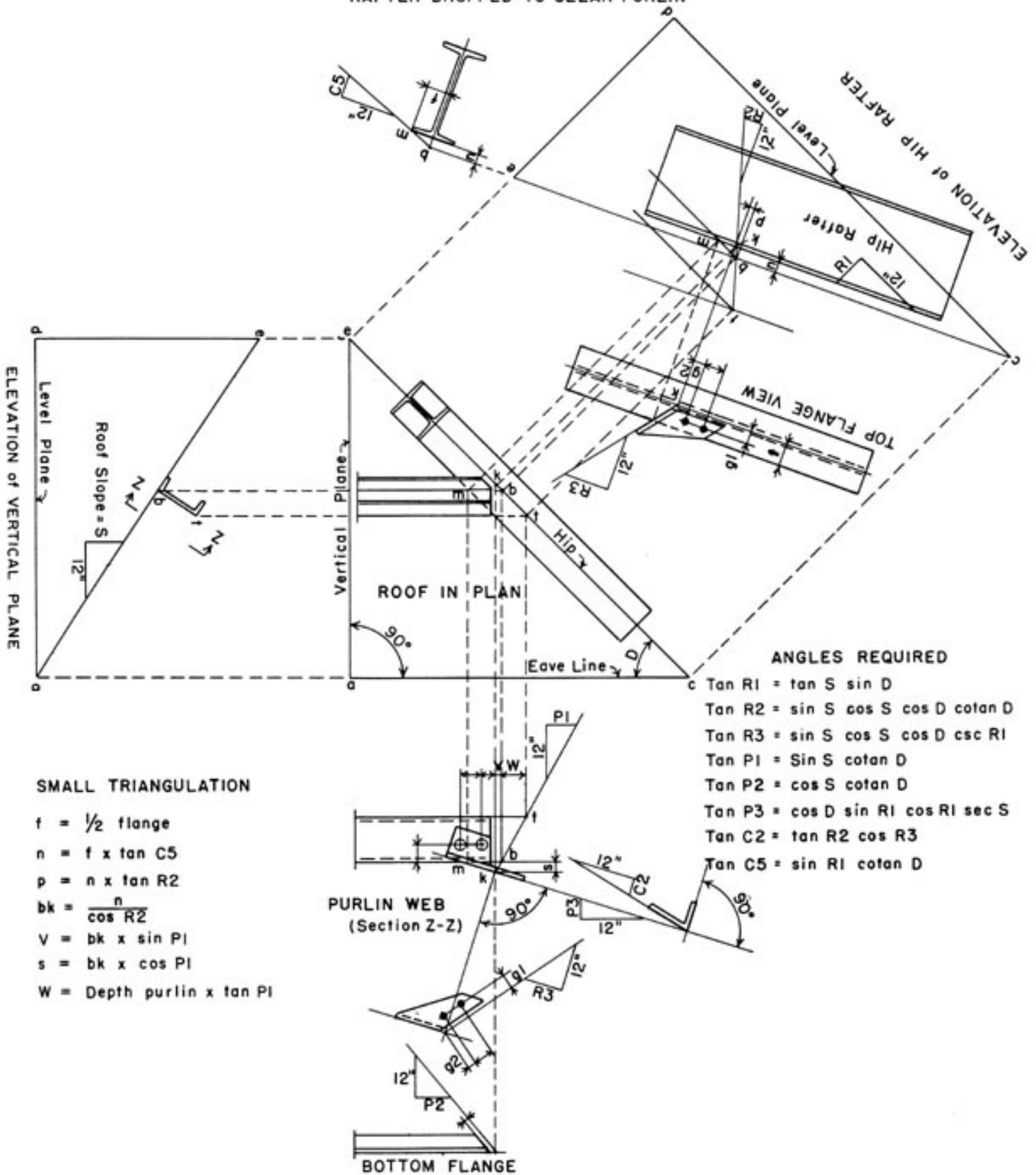
# MARTINDALE'S VALLEY CONNECTION SKETCH #4

CHANNEL PURLIN — BEAM RAFTER  
CLIP ANGLE BELOW PURLIN



# MARTINDALE'S HIP CONNECTION SKETCH #5

CHANNEL PURLIN — BEAM RAFTER  
CLIP ANGLE BELOW PURLIN  
RAFTER DROPPED TO CLEAR PURLIN



**ANGLES REQUIRED**

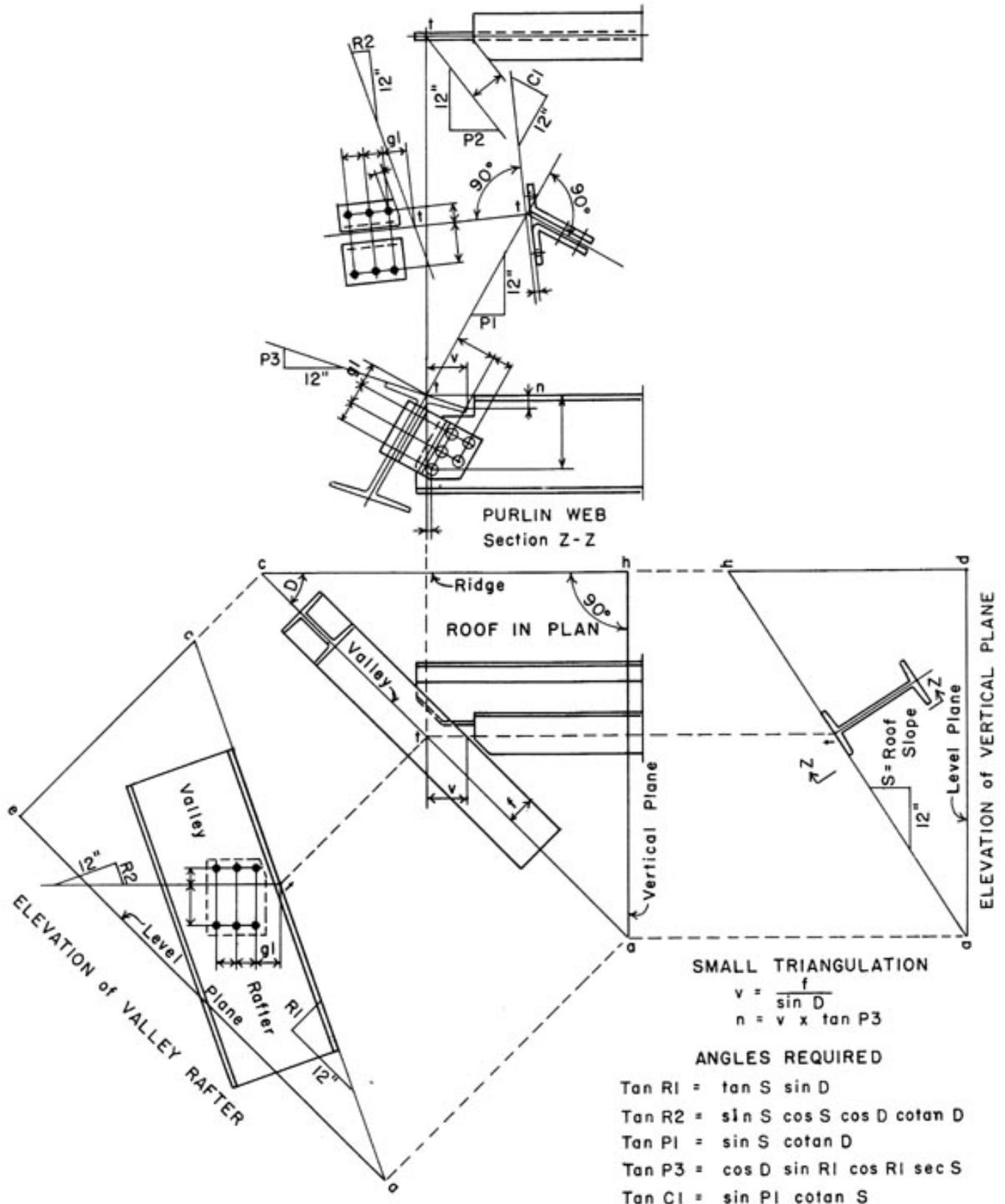
- Tan R1 = tan S sin D
- Tan R2 = sin S cos S cos D cotan D
- Tan R3 = sin S cos S cos D csc R1
- Tan P1 = Sin S cotan D
- Tan P2 = cos S cotan D
- Tan P3 = cos D sin R1 cos R1 sec S
- Tan C2 = tan R2 cos R3
- Tan C5 = sin R1 cotan D

**SMALL TRIANGULATION**

- f = 1/2 flange
- n = f x tan C5
- p = n x tan R2
- bk =  $\frac{n}{\cos R2}$
- v = bk x sin P1
- s = bk x cos P1
- W = Depth purlin x tan P1

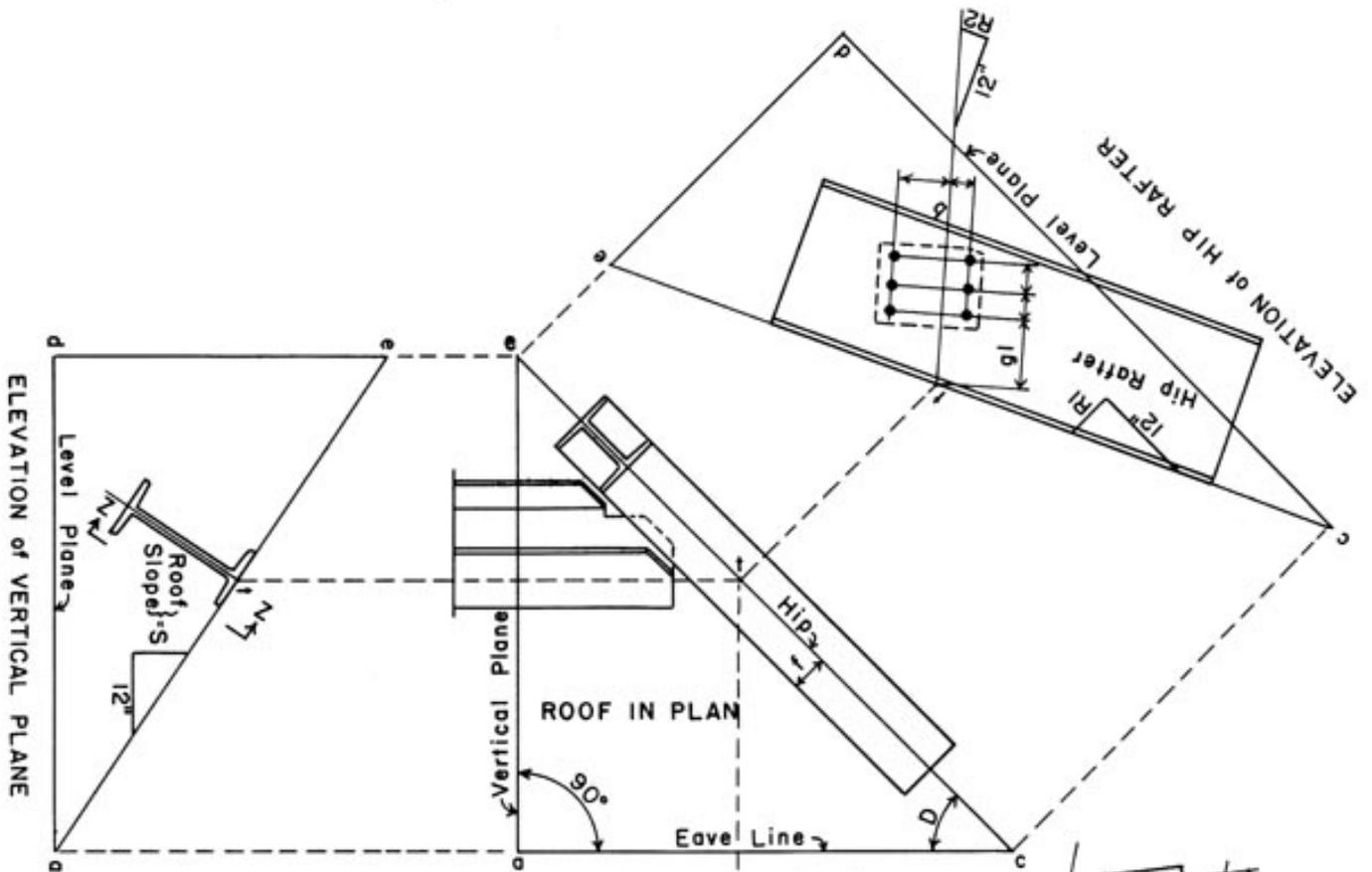
MARTINDALE'S  
**VALLEY CONNECTION SKETCH #6**

PURLIN WEB TO VALLEY RAFTER WEB  
 HOLES SQUARE WITH CONNECTION - SKEW IN BEAMS



MARTINDALE'S  
**HIP CONNECTION SKETCH #7**

PURLIN WEB TO HIP RAFTER WEB  
 HOLES SQUARE WITH CONNECTION - SKEW IN BEAMS



**SMALL TRIANGULATION**

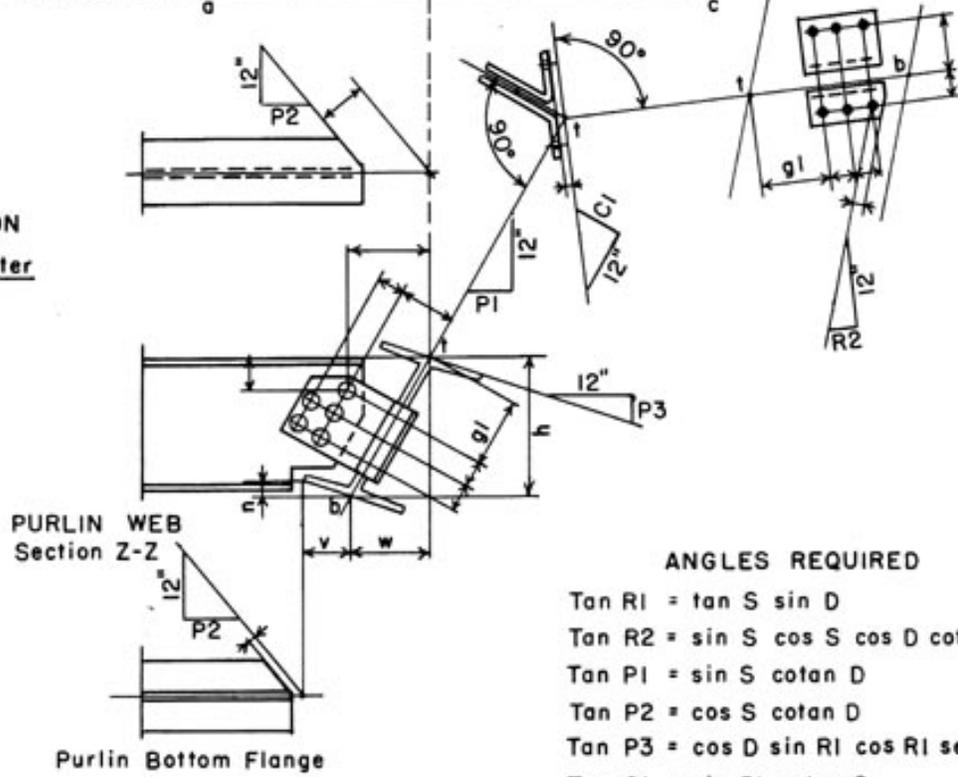
$$fb = \frac{\text{Depth of Hip Rafter}}{\cos R1}$$

$$w = fb \times \sin P1$$

$$h = fb \times \cos P1$$

$$v = \frac{f}{\sin D}$$

$$n = v \times \tan P3$$



**ANGLES REQUIRED**

$$\text{Tan } R1 = \tan S \sin D$$

$$\text{Tan } R2 = \sin S \cos S \cos D \cotan D$$

$$\text{Tan } P1 = \sin S \cotan D$$

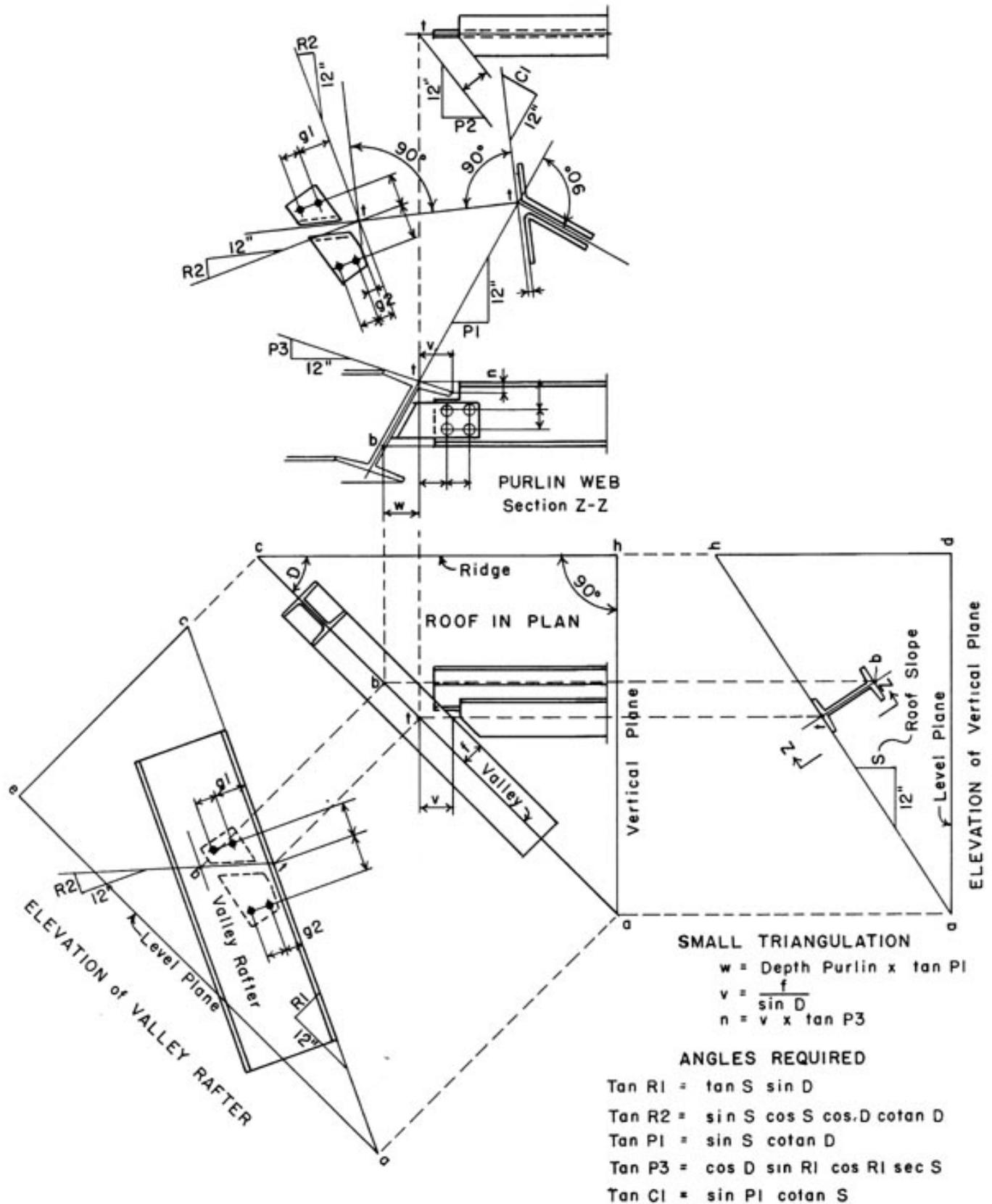
$$\text{Tan } P2 = \cos S \cotan D$$

$$\text{Tan } P3 = \cos D \sin R1 \cos R1 \sec S$$

$$\text{Tan } C1 = \sin P1 \cotan S$$

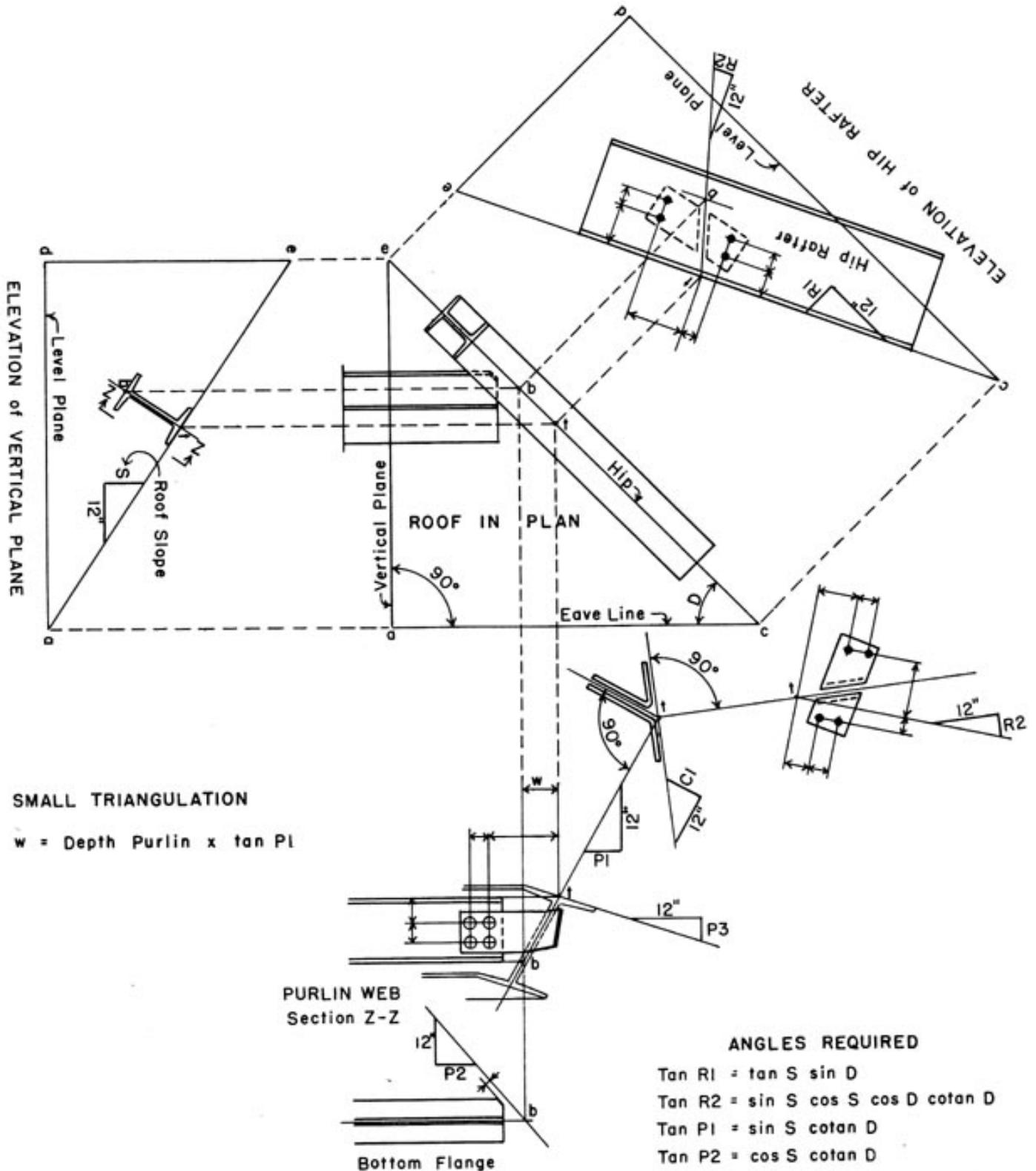
MARTINDALE'S  
**VALLEY CONNECTION SKETCH #8**

PURLIN WEB TO VALLEY RAFTER WEB  
 HOLES SQUARE WITH BEAM - SKEW IN CONNECTION



MARTINDALE'S  
**HIP CONNECTION SKETCH #9**

PURLIN WEB TO HIP RAFTER WEB  
 HOLES SQUARE WITH BEAMS - SKEW IN CONNECTION



**SMALL TRIANGULATION**

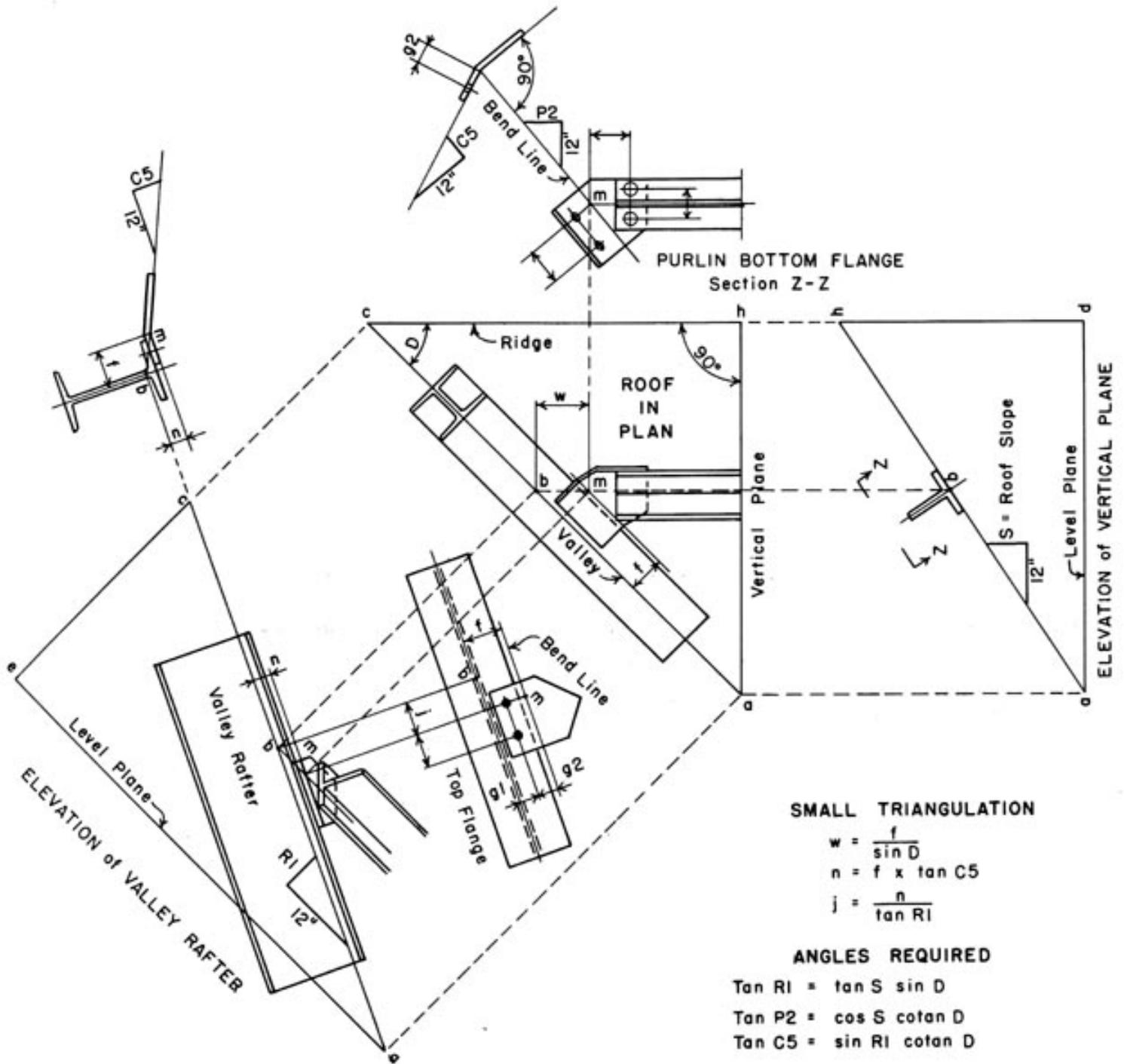
$w = \text{Depth Purlin} \times \tan P1$

**ANGLES REQUIRED**

- Tan R1 = tan S sin D
- Tan R2 = sin S cos S cos D cotan D
- Tan P1 = sin S cotan D
- Tan P2 = cos S cotan D
- Tan P3 = cos D sin R1 cos R1 sec S
- Tan C1 = sin P1 cotan S

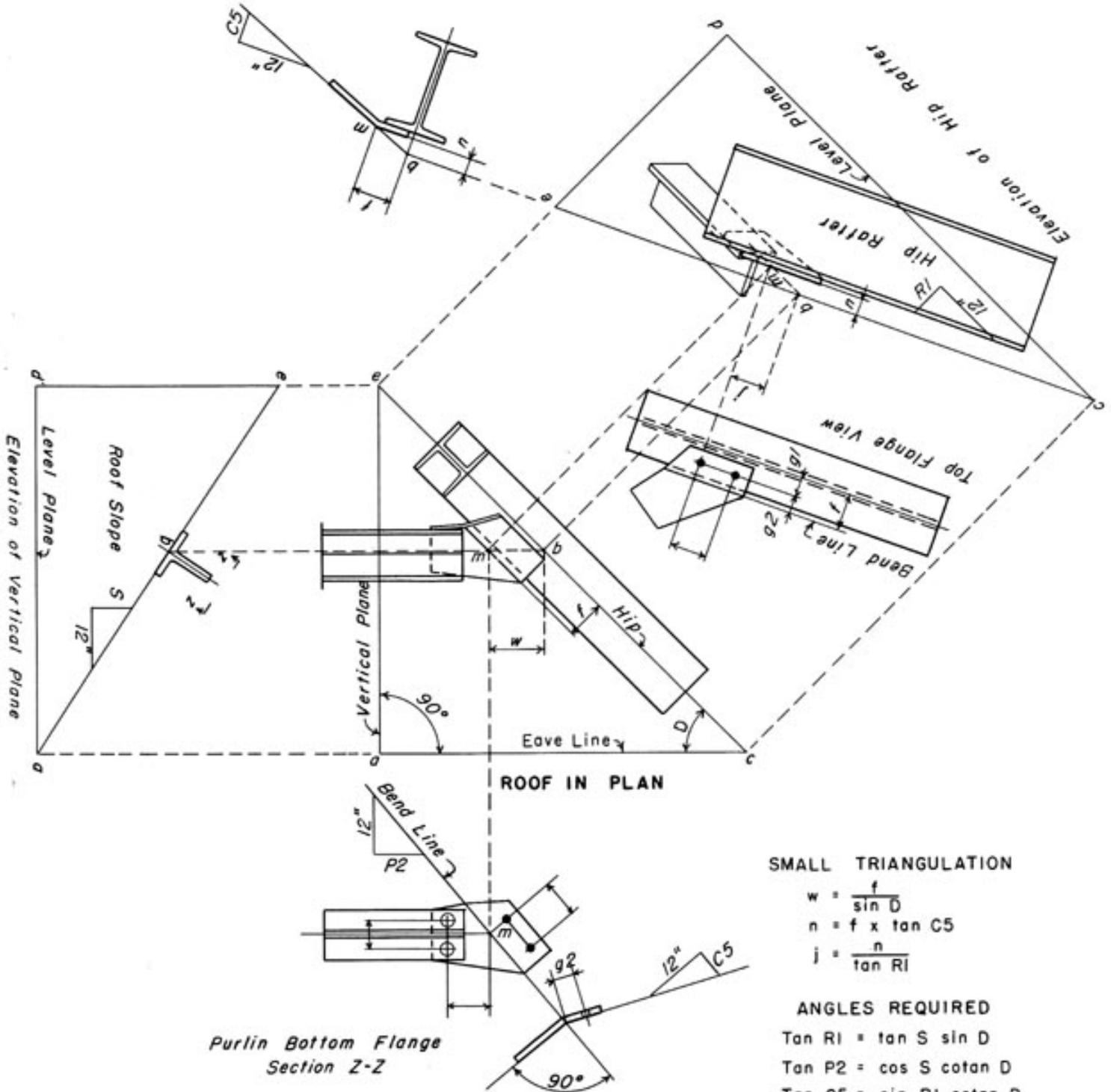
MARTINDALE'S  
**VALLEY CONNECTION SKETCH #10**

BENT PLATE CONNECTION  
 TEE PURLIN FLANGE TO VALLEY RAFTER FLANGE  
 RAFTER RAISED FOR BENT PLATE



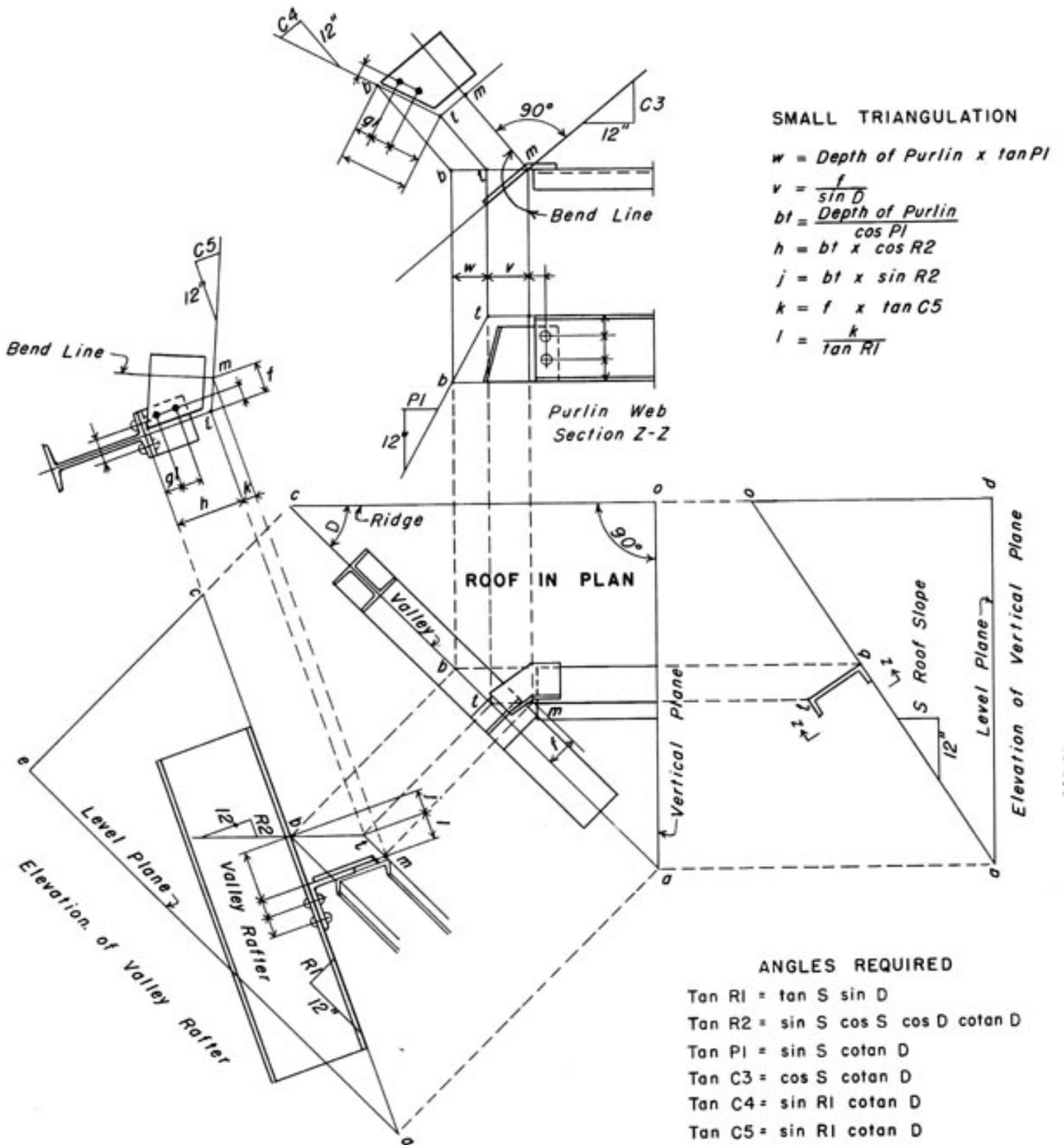
MARTINDALE'S  
**HIP CONNECTION SKETCH #11**

BENT PLATE CONNECTION  
 TEE PURLIN FLANGE TO HIP RAFTER FLANGE  
 RAFTER DROPPED FOR BENT PLATE



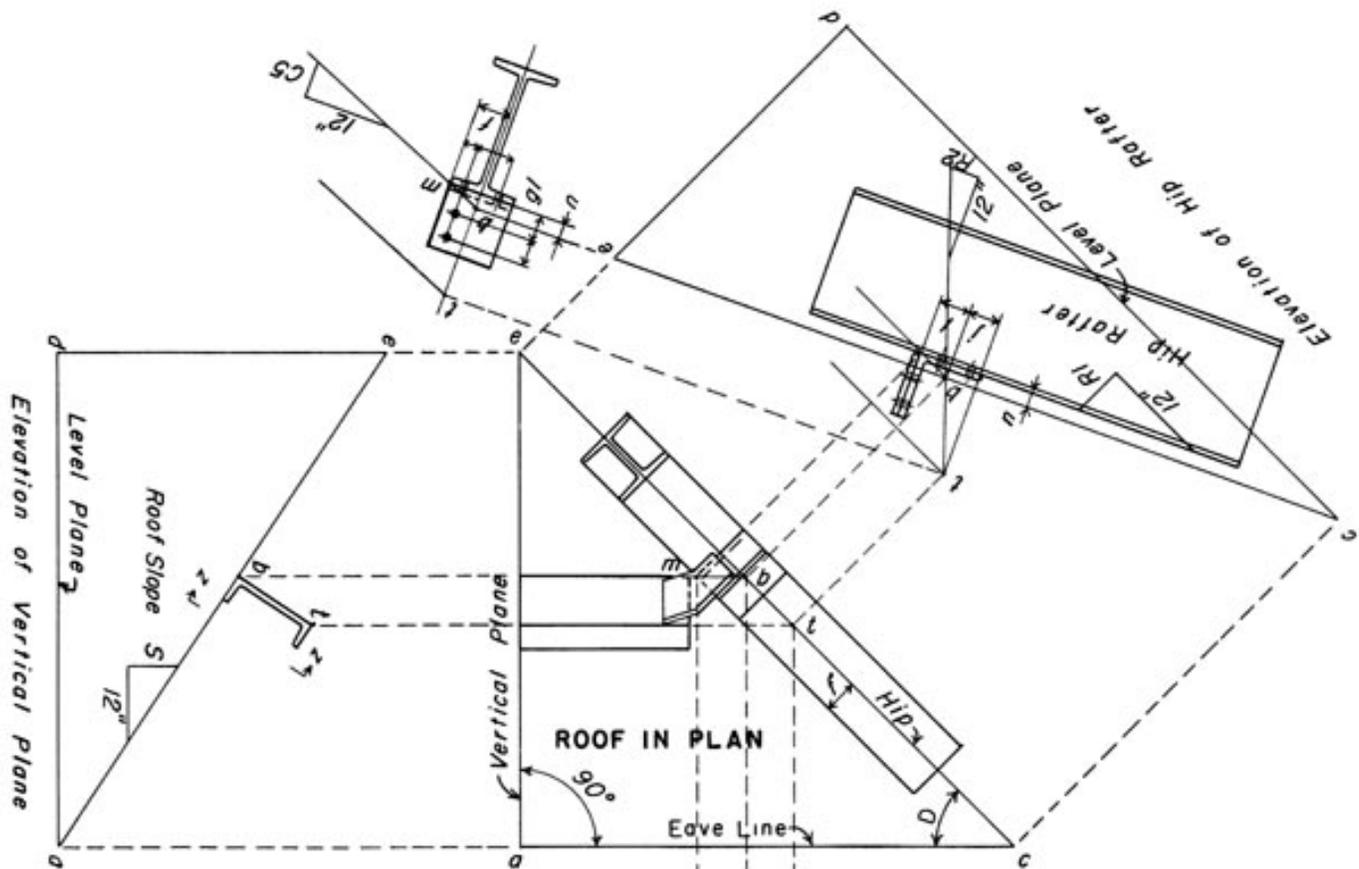
MARTINDALE'S  
**VALLEY CONNECTION SKETCH #12**

PURLIN WEB TO CLIP ON VALLEY RAFTER FLANGE



# HIP CONNECTION SKETCH #13

PURLIN WEB TO CLIP ON HIP RAFTER FLANGE  
 RAFTER DROPPED FOR CLEARANCE

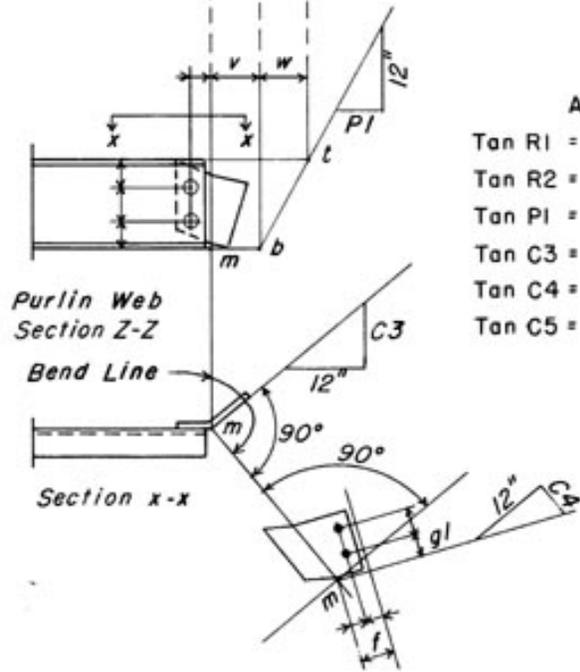


**SMALL TRIANGULATION**

$w = \text{Depth of Purlin} \times \tan P1$   
 $v = \frac{f}{\sin D}$   
 $n = f \times \tan C5$   
 $tb = \frac{\text{Depth Purlin}}{\cos P1}$   
 $j = tb \times \sin R2$   
 $l = \frac{n}{\tan R1}$

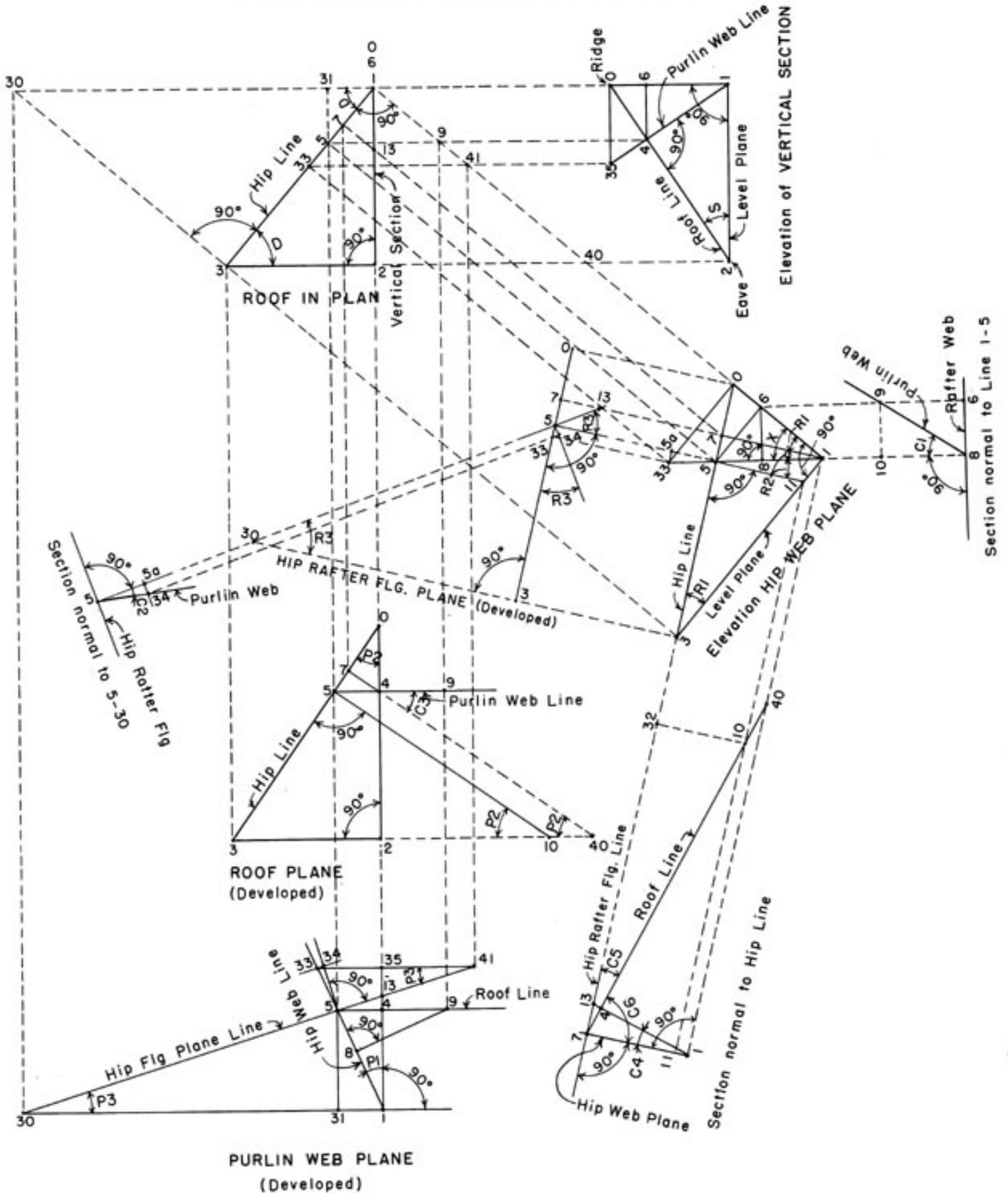
**ANGLES REQUIRED**

$\tan R1 = \tan S \sin D$   
 $\tan R2 = \sin S \cos S \cos D \cotan D$   
 $\tan P1 = \sin S \cotan D$   
 $\tan C3 = \cos S \cotan D$   
 $\tan C4 = \sin R1 \cotan D$   
 $\tan C5 = \sin R1 \cotan D$



# DIAGRAM FOR ANALYTIC PROOF

## HIP & VALLEY ROOF FRAMING ANGLE FORMULAS



ANALYTIC PROOF OF BEVEL ANGLE FORMULAS

Line values used in formulas on following pages

Numbered lines refer to Diagram page 32

LINE	VALUE
1-2	= Unity or one for trigonometric functions of slope S.
1-4	= sin S
1-0	= tan S
2-4	= cos S
2-0	= sec S = $\frac{1}{\cos S}$
1-3	= 1-2 $\frac{1}{\sin D} = \frac{1}{\sin D} = \csc D$
5-6	= 6-4 csc D = $\sin^2 S \csc D$
6-4	= sin S sin S = $\sin^2 S$
1-6	= sin S cos S
5-7	= 1-7 tan R2 = $\frac{\sin R1 \tan R2}{\sin D}$
1-7	= 1-3 sin R1 = $\frac{\sin R1}{\sin D}$
13-7	= 1-7 tan C5 = $\frac{\sin R1 \tan C5}{\sin D}$
3-5	= 1-6 $\frac{1}{\sin R1} = \frac{\sin S \cos S}{\sin R1}$
3-30	= 1-3 cotan D = $\frac{\cotan D}{\sin D} = \frac{\cos D}{\sin D} = \cos D$
2-3	= 1-2 cotan D = cotan D
5-31	= 1-4 = sin S
30-31	= 3-11 $\frac{1}{\cos D} = \frac{\sin S \cos S}{\sin R1 \cos R1 \cos D}$
3-11	= 5-11 $\frac{1}{\sin R1} = \frac{\sin S \cos S}{\sin R1 \cos R1}$
5-11	= 1-6 $\frac{1}{\cos R1} = \frac{\sin S \cos S}{\cos R1}$
6-8	= 1-6 sin (R1 + R2) = sin S cos S sin (R1 + R2)
9-6	= 8-10 = 5-9 sin D = $\frac{\sin S \cos S \sin (R1 + R2) \tan (R1 + R2) \sin D}{\sin P1}$
5-9	= 5-8 $\frac{1}{\sin P1} = \frac{\sin S \cos S \sin (R1 + R2) \tan (R1 + R2)}{\sin P1}$
5-8	= 6-8 tan (R1 + R2) = sin S cos S sin (R1 + R2) tan (R1 + R2)

ANALYTIC PROOF OF BEVEL ANGLE FORMULAS

Refer to pages 32 & 33

$$1. \quad \tan R1 = \frac{1-0}{1-3} = \frac{\tan S}{\sin D} = \tan S \sin D //$$

$$2. \quad \tan (R1 + R2) = \frac{5-6}{1-6} = \frac{\sin^2 S \csc D}{\sin S \cos S} = \frac{\sin S \csc D}{\cos S} = \tan S \csc D = \frac{\tan S}{\sin D}$$

$$\text{from equation } \tan (R1 + R2) = \frac{\tan R1 + \tan R2}{1 - \tan R1 \tan R2}$$

$$\frac{\tan S}{\sin D} = \frac{\tan S \sin D + \tan R2}{1 - \tan S \sin D \tan R2}$$

$$\tan S - \tan^2 S \sin D \tan R2 = \tan S \sin^2 D + \tan R2 \sin D$$

$$\tan S - \tan S \sin^2 D = \tan R2 \sin D + \tan^2 S \sin D \tan R2$$

$$\tan S (1 - \sin^2 D) = \tan R2 \sin D (1 + \tan^2 S)$$

$$\begin{aligned} \tan R2 &= \frac{\tan S (1 - \sin^2 D)}{\sin D (1 + \tan^2 S)} = \frac{\tan S \cos^2 D}{\sin D \sec^2 S} \\ &= \frac{\sin S \cos^2 D}{\sin D \cos^2 S} = \frac{\sin S \cos^2 D \cos^2 S}{\cos S \sin D} \\ &= \frac{\sin S \cos^2 D \cos S}{\sin D} \end{aligned}$$

$$\tan R2 = \sin S \cos S \cotan D \cos D //$$

$$3. \quad \tan R3 = \frac{5-7}{13-7} = \frac{\frac{\sin R1 \tan R2}{\sin D}}{\frac{\sin R1 \tan C5}{\sin D}} = \frac{\sin R1 \tan R2 \sin D}{\sin D \sin R1 \tan C5} = \frac{\tan R2}{\tan C5} =$$

$$= \tan R2 \cotan C5 //$$

$$\tan R3 = \frac{3-5}{3-30} = \frac{\frac{\sin S \cos S}{\sin R1}}{\cos D} = \frac{\sin S \cos S \cos D}{\sin R1} =$$

$$\tan R3 = \sin S \cos S \cos D \csc R1 //$$

$$4. \quad \tan P1 = \frac{5-4}{1-4} = \frac{6-4 \cotan D}{\sin S} = \frac{\sin^2 S \cotan D}{\sin S} = \sin S \cotan D //$$

$$5. \quad \tan P2 = \frac{2-3}{0-2} = \frac{\cotan D}{\cos S} = \cotan D \cos S //$$

ANALYTIC PROOF OF BEVEL ANGLE FORMULAS

Refer to pages 32 & 33

$$6. \quad \tan P3 = \frac{5-31}{30-31} = \frac{\frac{\sin S}{\sin S \cos S}}{\frac{\sin R1 \cos R1 \cos D}{\sin S \cos S}} = \frac{\sin S \sin R1 \cos R1 \cos D}{\sin S \cos S} = \frac{\sin R1 \cos R1 \cos D}{\cos S} = \sin R1 \cos R1 \cos D \sec S //$$

$$7. \quad \tan C1 = \frac{6-8}{9-6} = \frac{\frac{\sin S \cos S \sin (R1 + R2)}{\sin S \cos S \sin (R1 + R2) \tan (R1 + R2) \sin D}}{\sin P1} = \frac{\sin P1}{\tan (R1 + R2) \sin D} = \frac{\tan S \sin D}{\sin D} = \frac{\sin P1}{\tan S} =$$

$$\tan C1 = \sin P1 \cotan S //$$

$$8. \quad \tan C2 = \frac{5a-34}{5-5a} = \frac{5a-33 \cos R3}{5-33 \cos R2} = \frac{5-33 \sin R2 \cos R3}{5-33 \cos R2} =$$

$$\tan C2 = \cos R3 \tan R2 //$$

9.  $\tan C3$  In roof plane angle  $C3$  is indicated by lines 7-4-5

7-4 is  $90^\circ$  from 0-3

4-5 is  $90^\circ$  from 0-2

Lines 0-3 & 0-2 are sides of angle  $P2$

$\therefore$  Angle  $C3 =$  angle  $P2$

$\therefore \tan C3 = \cos S \cotan D //$

$$10. \quad \tan C4 = \frac{7-13}{1-7} \quad 7-13 = 7-40 \cotan D = \frac{\cotan D \sin^2 R1}{\sin D}$$

$$7-40 = 1-7 \sin R1$$

$$1-7 = 1-3 \sin R1$$

$$1-3 = \frac{1}{\sin D}$$

$$\tan C4 = \frac{\frac{\cotan D \sin^2 R1}{\sin D}}{\frac{\sin R1}{\sin D}} = \cotan D \sin R1 //$$

ANALYTIC PROOF OF BEVEL ANGLE FORMULAS

Refer to pages 32 & 33

$$11. \quad \tan C5 = \frac{1-7}{1-40} = \frac{\frac{\sin R1}{\sin D}}{\frac{\tan D}{\sin D}} = \frac{\sin R1}{\tan D} = \sin R1 \cotan D //$$

$$1-40 = 1-3 \tan D$$

$$1-3 = \frac{1}{\sin D}$$

$$\therefore 1-40 = \frac{\tan D}{\sin D}$$

$$12. \quad \tan C6 = 90^\circ - C5 = \cotan C6 = \cotan D \sin R1$$

$$\tan C6 = \tan D \csc R1 //$$

$$13. \quad \tan D \text{ when angle } A = 90^\circ$$

$$\tan R1 = \tan S \sin D$$

$$\tan R1 = \tan S' \sin D'$$

$$\therefore \tan S \sin D = \tan S' \sin D'$$

$$\text{when } A = 90^\circ \sin D' = \cos D$$

$$\therefore \tan S \sin D = \tan S' \cos D$$

$$\tan S \frac{\sin D}{\cos D} = \tan S'$$

$$\tan D = \frac{\tan S'}{\tan S} //$$

$$14. \quad \text{Refer to page 15. } C7 = 90^\circ - (C5 + C5')$$

$$\therefore \sin C7 = \cos (C5 + C5')$$

$$\cos (C5 + C5') = \cos C5 \cos C5' - \sin C5 \sin C5'$$

Refer to diagram page 32.

$$\cos C5 = \frac{1-40}{7-40}$$

$$1-40 = 1-3 \tan D$$

$$1-3 = \frac{1}{\sin D}$$

$$1-40 = \frac{\tan D}{\sin D} //$$

$$7-40 = 7-3 \frac{1}{\tan P2}$$

$$7-3 = 1-3 \cos R1$$

$$1-3 = \frac{1}{\sin D}$$

$$7-40 = \frac{\cos R1}{\tan P2 \sin D} //$$

$$\sin C5 = \frac{1-7}{7-40}$$

$$1-7 = \frac{\sin R1}{\sin D}$$

$$\sin C5 = \frac{\frac{\sin R1}{\sin D}}{\frac{\cos R1}{\tan P2 \sin D}}$$

$$\sin C5 = \frac{\sin R1 \tan P2}{\cos R1} //$$

ANALYTIC PROOF OF BEVEL ANGLE FORMULAS

14. continued

$$\cos C5 = \frac{\frac{\tan D}{\sin D}}{\frac{\cos Rl}{\tan P2 \sin D}} = \frac{\tan D \tan P2}{\cos Rl} //$$

$$\begin{aligned} \therefore \sin C7 &= \frac{\tan D \tan P2}{\cos Rl} \frac{\tan D' \tan P2'}{\cos Rl} - \frac{\sin Rl \tan P2}{\cos Rl} \frac{\sin Rl \tan P2'}{\cos Rl} \\ &= \frac{\tan D \tan P2 \cotan D \tan P2' - \sin^2 Rl \tan P2 \tan P2'}{\cos^2 Rl} \end{aligned}$$

$$\tan D \cotan D = 1$$

$$\begin{aligned} \therefore \sin C7 &= \frac{\tan P2 \tan P2' - \sin^2 Rl \tan P2 \tan P2'}{\cos^2 Rl} \\ &= \frac{\cos S \cotan D \cos S' \cotan D' - \sin^2 Rl \cos S \cotan D \cos S' \cotan D'}{\cos^2 Rl} \end{aligned}$$

$$\begin{aligned} D' = 90^\circ - D \quad \therefore \cotan D' &= \tan D \\ &= \frac{\cos S \cotan D \cos S' \tan D - \sin^2 Rl \cos S \cotan D \sin S' \tan D}{\cos^2 Rl} \\ &= \frac{\cos S \cos S' - \sin^2 Rl \cos S \cos S'}{\cos^2 Rl} \\ &= \frac{\cos S \cos S' (1 - \sin^2 Rl)}{\cos^2 Rl} \end{aligned}$$

$$\begin{aligned} (1 - \sin Rl) &= \cos^2 Rl \\ &= \frac{\cos S \cos S' \cos^2 Rl}{\cos^2 Rl} \end{aligned}$$

$$\sin C7 = \cos S \cos S' //$$

**NOTES ON****HIP & VALLEY FRAMING ANGLE TABLES**

Where the difference in pitch for any angle for one degree of angle D exceeds  $1/16$ ", the pitch to the nearest  $1/16$ " can be found by interpolating the minutes of angle D. The greatest difference to be found in the tables is  $11/16$ " and in most cases much less.

For example, given an 8" vertical pitch roof slope and angle  $D=56^{\circ} 20'$ , to find pitch of angle P1. On [page 47](#) the pitch for P1 @  $56^{\circ}$  is  $4-1/2$ " and for  $57^{\circ}$  is  $4-5/16$ ". Subtract  $1/16$ " from the pitch for  $56^{\circ}$  and we get the correct pitch for  $56^{\circ} 20'$  to be  $4-7/16$ ".

Note that in some positions the pitch of an angle becomes less as angle D increases, and in other positions they increase. The pitch will reduce or increase accordingly.

Angle C6 is given in degrees and minutes to facilitate adding together the values of C6 for each of two sides of a valley corner angle for bins, hoppers, etc. The full inside valley angle C8 for such corners can be found by adding together the angular value of C6 for each of the two sloping sides.

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# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 1"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	1 5/16	1/8	4 1 1/3 2	3/8	4 1 1/3 2	5/16	4 1 1/3 2	1/8	1 1/3 2	88° 22'
69°	1 5/16	1/8	4 9/16	3/8	4 1 9/32	1 1/3 2	4 1 9/32	1/8	1 1/3 2	88° 17'
68°	1 5/16	5/32	4 13/16	13/32	4 2 7/32	1 1/3 2	4 2 7/32	1/8	3/8	88° 13'
67°	2 9/32	5/32	5 1/16	13/32	5 1/16	3/8	5 1/16	5/32	3/8	88° 08'
66°	2 9/32	3/16	5 5/16	7/16	5 5/16	3/8	5 5/16	5/32	1 3/32	88° 04'
65°	2 9/32	3/16	5 9/16	1 5/32	5 9/16	3/8	5 9/16	3/16	1 3/32	87° 59'
64°	2 9/32	7/32	5 13/16	1 5/32	5 13/16	1 3/32	5 13/16	3/16	7/16	87° 55'
63°	2 9/32	7/32	6 1/16	1/2	6 3/32	1 3/32	6 3/32	3/16	7/16	87° 50'
62°	7/8	1/4	6 1 1/3 2	1 7/32	6 1 1/3 2	1 3/32	6 1 1/3 2	7/32	1 5/32	87° 46'
61°	7/8	1/4	6 5/8	1 1/3 2	6 5/8	7/16	6 5/8	7/32	1 5/32	87° 41'
60°	7/8	9/32	6 2 9/32	9/16	6 2 9/32	7/16	6 2 9/32	1/4	1/2	87° 37'
59°	2 7/32	5/16	7 3/16	1 9/32	7 3/16	7/16	7 3/32	1/4	1/2	87° 33'
58°	2 7/32	5/16	7 1 5/32	5/8	7 1 5/32	7/16	7 1 5/32	1/4	1 7/32	87° 29'
57°	2 7/32	1 1/3 2	7 3/4	5/8	7 3/4	1 5/32	7 3/4	9/32	1 7/32	87° 24'
56°	1 3/16	3/8	8 1/16	2 1/3 2	8 1/16	1 5/32	8 1/16	5/16	9/16	87° 20'
55°	1 3/16	1 3/32	8 3/8	1 1/16	8 3/8	1 5/32	8 3/8	5/16	9/16	87° 16'
54°	1 3/16	7/16	8 1 1/16	2 3/32	8 1 1/16	1 5/32	8 1 1/16	1 1/32	1 9/32	87° 12'
53°	1 3/16	7/16	9	3/4	9	1/2	9	3/8	1 9/32	87° 08'
52°	2 5/32	1 5/32	9 5/16	2 5/32	9 3/8	1/2	9 1 1/3 2	3/8	5/8	87° 04'
51°	2 5/32	1/2	9 2 1/3 2	1 3/16	9 1 1/16	1/2	9 2 1/3 2	3/8	5/8	87° 00'
50°	2 5/32	1 7/32	10 1/3 2	2 7/32	10 1/3 2	1/2	10	1 3/32	2 1/3 2	86° 56'
49°	3/4	9/16	10 3/8	7/8	10 3/8	1/2	10 1 1/3 2	7/16	2 1/3 2	86° 52'
48°	3/4	1 9/32	10 3/4	2 9/32	10 3/4	1/2	10 2 3/3 2	7/16	2 1/3 2	86° 48'
47°	3/4	5/8	11 1/8	1 5/16	11 1/8	1/2	11 3/3 2	7/16	1 1/16	86° 44'
46°	2 3/3 2	2 1/3 2	11 1 7/3 2	3 1/3 2	11 1 7/3 2	1/2	11 1/2	1 5/3 2	1 1/16	86° 42'
45°	2 3/3 2	1 1/16	11 1 5/16	1	11 3 1/3 2	1/2	11 2 9/3 2	1/2	2 3/3 2	86° 38'
44°	2 3/3 2	3/4	*11 2 1/3 2	1 1/3 2	*11 5/8	1/2	*11 2 1/3 2	1/2	2 3/3 2	86° 35'
43°	1 1/16	2 5/3 2	*11 1/4	1 1/16	*11 7/3 2	1/2	*11 9/3 2	1 7/3 2	2 3/3 2	86° 32'
42°	1 1/16	1 3/16	*10 7/8	1 3/3 2	*10 2 7/3 2	1/2	*10 7/8	1 7/3 2	3/4	86° 28'
41°	2 1/3 2	7/8	*10 1/2	1 5/3 2	*10 1 5/3 2	1/2	*10 1/2	9/16	3/4	86° 25'
40°	2 1/3 2	2 9/3 2	*10 1/8	1 3/16	*10 3/3 2	1/2	*10 5/3 2	1 9/3 2	3/4	86° 22'
39°	5/8	3 1/3 2	*9 3/4	1 1/4	*9 3/4	1/2	*9 1 3/16	1 9/3 2	2 5/3 2	86° 19'
38°	5/8	1	*9 1 3/3 2	1 9/3 2	*9 1 3/3 2	1/2	*9 1 5/3 2	5/8	2 5/3 2	86° 16'
37°	1 9/3 2	1 1/16	*9 1/16	1 5/16	*9 1/16	1/2	*9 1/8	5/8	2 5/3 2	86° 13'
36°	1 9/3 2	1 1/8	*8 3/4	1 3/8	*8 3/4	1 5/3 2	*8 1 3/16	2 1/3 2	1 3/16	86° 10'
35°	9/16	1 5/3 2	*8 7/16	1 7/16	*8 7/16	1 5/3 2	*8 1/2	2 1/3 2	1 3/16	86° 07'
34°	9/16	1 7/3 2	*8 1/8	1 1/2	*8 1/8	1 5/3 2	*8 3/16	1 1/16	1 3/16	86° 04'
33°	1 7/3 2	1 9/3 2	*7 2 7/3 2	1 1 7/3 2	*7 2 7/3 2	1 5/3 2	*7 7/8	1 1/16	2 7/3 2	86° 01'
32°	1 7/3 2	1 1 1/3 2	*7 1 7/3 2	1 1 9/3 2	*7 1 7/3 2	1 5/3 2	*7 1 9/3 2	2 3/3 2	2 7/3 2	85° 59'
31°	1 7/3 2	1 1 3/3 2	*7 1/4	1 2 1/3 2	*7 1/4	7/16	*7 5/16	2 3/3 2	2 7/3 2	85° 56'
30°	1/2	1 1/2	*6 3 1/3 2	1 2 3/3 2	*6 1 5/16	7/16	*7 1/3 2	3/4	7/8	85° 53'
29°	1/2	1 9/16	*6 1 1/16	1 2 5/3 2	*6 1 1/16	7/16	*6 3/4	3/4	7/8	85° 50'
28°	1 5/3 2	1 2 1/3 2	*6 1 3/3 2	1 7/8	*6 1 3/3 2	1 3/3 2	*6 1/2	2 5/8 2	7/8	85° 48'
27°	1 5/3 2	1 3/4	*6 5/3 2	1 1 5/16	*6 1/8	1 3/3 2	*6 7/3 2	2 5/3 2	7/8	85° 45'
26°	7/16	1 1 3/16	*5 7/8	2 1/3 2	*5 7/8	1 3/3 2	*5 3 1/3 2	1 3/16	2 9/3 2	85° 43'
25°	7/16	1 1 5/16	*5 5/8	2 1/8	*5 5/8	3/8	*5 2 3/3 2	1 3/16	2 9/3 2	85° 40'
24°	1 3/3 2	2 1/3 2	*5 3/8	2 1/4	*5 3/8	3/8	*5 7/16	2 7/3 2	2 9/3 2	85° 38'
23°	1 3/3 2	2 1/8	*5 1/8	2 1 1/3 2	*5 1/8	3/8	*5 7/3 2	2 7/3 2	2 9/3 2	85° 36'
22°	3/8	2 1/4	*4 7/8	2 1 5/3 2	*4 7/8	1 1/3 2	*4 3 1/3 2	2 7/3 2	2 9/3 2	85° 35'
21°	3/8	2 1 3/3 2	*4 5/8	2 1 9/3 2	*4 5/8	1 1/3 2	*4 2 3/3 2	7/8	1 5/16	85° 33'
20°	1 1/3 2	2 9/16	*4 1 3/3 2	2 3/4	*4 3/8	5/16	*4 1/2	7/8	1 5/16	85° 31'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 2"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	1 7/8	1/4	4 5/16	2 3/32	4 5/16	5/8	4 5/16	7/32	1 1/16	86°47'
69°	1 7/8	9/32	4 1 7/32	3/4	4 1 7/32	2 1/32	4 1 7/32	1/4	2 3/32	86°37'
68°	1 7/8	9/32	4 3/4	2 5/32	4 2 5/32	1 1/16	4 2 5/32	1/4	3/4	86°28'
67°	1 2 7/32	5/16	5	1 3/16	5 1/32	2 3/32	5 1/32	9/32	2 5/32	86°19'
66°	1 1 3/16	1 1/32	5 1/4	7/8	5 3/32	3/4	5 3/32	5/16	1 3/16	86°10'
65°	1 1 3/16	3/8	5 1/2	2 9/32	5 1 7/32	3/4	5 1/2	1 1/32	2 7/32	86°01'
64°	1 2 5/32	1 3/32	5 3/4	3 1/32	5 2 5/32	2 5/32	5 3/4	3/8	7/8	85°52'
63°	1 2 5/32	7/16	6	1	6 1/32	1 3/16	6	1 3/32	2 9/32	85°43'
62°	1 2 5/32	1/2	6 9/32	1 1/32	6 9/32	1 3/16	6 9/32	7/16	1 5/16	85°34'
61°	1 3/4	1 7/32	6 1 7/32	1 3/32	6 9/16	2 7/32	6 1 7/32	1 5/32	3 1/32	85°25'
60°	1 3/4	9/16	6 1 3/16	1 1/8	6 2 7/32	7/8	6 1 3/16	1/2	1	85°17'
59°	1 2 3/32	1 9/32	7 3/32	1 3/16	7 3/32	7/8	7 1/16	1 7/32	1 1/32	85°09'
58°	1 1 1/16	2 1/32	7 3/8	1 7/32	7 3/8	7/8	7 1 1/32	9/16	1 1/16	85°00'
57°	1 1 1/16	1 1/16	7 2 1/32	1 9/32	7 1 1/16	2 9/32	7 5/8	1 9/32	1 1/16	84°52'
56°	1 2 1/32	3/4	7 1 5/16	1 1 1/32	7 3 1/32	2 9/32	7 1 5/16	5/8	1 3/32	84°43'
55°	1 2 1/32	2 5/32	8 1/4	1 3/8	8 9/32	1 5/16	8 1/4	2 1/32	1 1/8	84°35'
54°	1 5/8	2 7/32	8 9/16	1 7/16	8 1 9/32	1 5/16	8 9/16	1 1/16	1 5/32	84°26'
53°	1 1 9/32	2 9/32	8 7/8	1 1/2	8 1 5/16	1 5/16	8 7/8	2 3/32	1 3/16	84°18'
52°	1 9/16	1 5/16	9 3/16	1 1 7/32	9 1/4	3 1/32	9 3/16	3/4	1 7/32	84°10'
51°	1 9/16	1	9 1/2	1 9/32	9 1 9/32	3 1/32	9 1/2	2 5/32	1 1/4	84°02'
50°	1 1 7/32	1 1/16	9 7/8	1 2 1/32	9 1 5/16	3 1/32	9 2 7/32	1 3/16	1 9/32	83°54'
49°	1 1/2	1 3/8	10 1/4	1 2 3/32	10 9/32	1	10 3/16	2 7/32	1 5/16	83°47'
48°	1 1/2	1 3/16	10 5/8	1 2 3/32	10 7/8	1	10 1 7/32	7/8	1 5/16	83°40'
47°	1 1 5/32	1 1/4	11	1 2 7/32	11 1/32	1	10 2 9/32	2 9/32	1 1 1/32	83°33'
46°	1 7/16	1 5/16	11 3/8	1 2 9/32	11 7/16	1	11 9/32	1 5/16	1 3/8	83°26'
45°	1 1 3/32	1 3/8	11 3/4	1 3 1/32	11 2 7/32	1	11 1 1/16	3 1/32	1 1 3/32	83°19'
44°	1 3/8	1 1 3/32	*11 2 7/32	2 1/32	*11 3/4	1	*11 2 9/32	1	1 7/16	83°12'
43°	1 3/8	1 1 7/32	*11 7/16	2 1/8	*11 1 1/32	1	*11 1 7/32	1 1/16	1 7/16	83°06'
42°	1 1 1/32	1 5/8	*11 1/16	2 3/16	*10 1 5/16	1	*11 1/8	1 3/32	1 1 5/32	82°59'
41°	1 5/16	1 1 1/16	*10 2 1/32	2 9/32	*10 1 9/32	1	*10 3/4	1 1/8	1 1/2	82°53'
40°	1 9/32	1 2 5/32	*10 9/32	2 1 1/32	*10 7/32	1	*10 1 3/32	1 5/32	1 1 7/32	82°46'
39°	1 1/4	1 7/8	*9 1 5/16	2 7/16	*9 7/8	3 1/32	*10 1/16	1 3/16	1 9/16	82°40'
38°	1 7/32	1 3 1/32	*9 5/8	2 1 7/32	*9 1/2	3 1/32	*9 2 3/32	1 7/32	1 9/16	82°34'
37°	1 3/16	2 1/16	*9 1/4	2 5/8	*9 5/32	3 1/32	*9 3/8	1 1/4	1 1 9/32	82°28'
36°	1 5/32	2 5/32	*8 2 9/32	2 2 3/32	*8 2 7/32	3 1/32	*9 1/16	1 9/32	1 5/8	82°22'
35°	1 5/32	2 9/32	*8 1 9/32	2 1 3/16	*8 1 7/32	1 5/16	*8 3/4	1 5/16	1 5/8	82°16'
34°	1 1/8	2 3/8	*8 1/4	2 1 5/16	*8 7/32	1 5/16	*8 7/16	1 1 1/32	1 2 1/32	82°11'
33°	1 3/32	2 1/2	*7 3 1/32	3 1/32	*7 2 9/32	2 9/32	*8 5/32	1 3/8	1 2 1/32	82°05'
32°	1 1/16	2 5/8	*7 1 1/16	3 5/32	*7 5/8	2 9/32	*7 7/8	1 1 3/32	1 1 1/16	82°00'
31°	1 1/32	2 2 5/32	*7 3/8	3 9/32	*7 5/16	7/8	*7 1 9/32	1 7/16	1 2 3/32	81°54'
30°	1	2 2 9/32	*7 3/32	3 1 3/32	*7 3/32	7/8	*7 5/16	1 1/2	1 2 3/32	81°49'
29°	3 1/32	3 1/16	*6 1 3/16	3 9/16	*6 3/4	2 7/32	*7 3/32	1 1/2	1 3/4	81°44'
28°	1 5/16	3 3/32	*6 9/16	3 2 3/32	*6 1/2	2 7/32	*6 2 3/32	1 1 7/32	1 3/4	81°39'
27°	2 9/32	3 1 3/32	*6 9/32	3 7/8	*6 3/32	1 3/16	*6 1/2	1 9/16	1 2 5/32	81°34'
26°	7/8	3 1 9/32	*6	4 3/32	*5 1 5/16	2 5/32	*6 1/4	1 9/32	1 2 5/32	81°29'
25°	2 7/32	3 2 5/32	*5 3/4	4 7/32	*5 1 1/16	2 5/32	*6	1 5/8	1 1 3/16	81°25'
24°	1 3/16	4	*5 1/2	4 1 3/32	*5 7/16	3/4	*5 2 5/32	1 2 1/32	1 1 3/16	81°21'
23°	2 5/32	4 7/32	*5 1/4	4 5/8	*5 3/16	2 3/32	*5 1 7/32	1 1 1/16	1 2 7/32	81°18'
22°	3/4	4 7/16	*5	4 7/8	*4 1 5/16	1 1/16	*5 9/32	1 1 1/16	1 2 7/32	81°14'
21°	2 3/32	4 2 3/32	*4 2 3/32	5 1/8	*4 1 1/16	1 1/16	*5 1/16	1 3/4	1 7/8	81°11'
20°	1 1/16	5 1/32	*4 1 5/32	5 1 3/32	*4 7/16	2 1/32	*4 7/8	1 3/4	1 7/8	81°07'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 3"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	2 1/32	1 1/32	4 7/32	1 1/16	4 1/4	1 5/16	4 7/32	1 1/32	1	85°15'
69°	2 13/16	1 3/32	4 7/16	1 1/8	4 1 5/32	3 1/32	4 1 5/32	3/8	1 1/32	85°01'
68°	2 2 5/32	7/16	4 1 1/16	1 5/32	4 2 3/32	1 1/32	4 1 1/16	1 3/32	1 3/32	84°47'
67°	2 3/4	1 5/32	4 1 5/16	1 7/32	4 1 5/16	1 1/16	4 2 3/32	7/16	1 5/32	84°33'
66°	2 3/4	1 7/32	5 5/32	1 9/32	5 3/16	1 3/32	5 5/32	1 5/32	1 3/16	84°20'
65°	2 2 3/32	9/16	5 1 3/32	1 1 1/32	5 7/16	1 1/8	5 1 3/32	1/2	1 1/4	84°07'
64°	2 1 1/16	5/8	5 2 1/32	1 1 3/32	5 1 1/16	1 5/32	5 5/8	1 7/32	1 9/32	83°54'
63°	2 1 1/16	2 1/32	5 7/8	1 1 5/32	5 1 5/16	1 3/16	5 7/8	1 9/32	1 1 1/32	83°41'
62°	2 2 1/32	2 3/32	6 5/32	1 1 7/32	6 3/16	1 7/32	6 1/8	5/8	1 3/8	83°28'
61°	2 5/8	3/4	6 1 3/32	1 5/8	6 1 5/32	1 1/4	6 3/8	2 1/32	1 7/16	83°15'
60°	2 1 9/32	1 3/16	6 2 1/32	1 1 1/16	6 2 3/32	1 9/32	6 2 1/32	2 3/32	1 1 5/32	83°02'
59°	2 9/16	7/8	6 1 5/16	1 3/4	7	1 9/32	6 2 3/32	3/4	1 1/2	82°49'
58°	2 9/16	1 5/16	7 3/16	1 1 3/16	7 3/32	1 5/16	7 3/16	1 3/16	1 9/16	82°36'
57°	2 1 7/32	1	7 1/2	1 7/8	7 9/16	1 1 1/32	7 1 5/32	2 7/32	1 1 9/32	82°24'
56°	2 1/2	1 1/16	7 2 5/32	1 3 1/32	7 2 7/32	1 3/8	7 3/4	2 9/32	1 2 1/32	82°12'
55°	2 1 5/32	1 1/8	8 1/16	2 1/32	8 5/32	1 1 3/32	8 1/32	1 5/16	1 1 1/16	82°00'
54°	2 7/16	1 3/16	8 3/8	2 3/32	8 1 5/32	1 1 3/32	8 1 1/32	1	1 2 3/32	81°48'
53°	2 1 3/32	1 9/32	8 1 1/16	2 3/16	8 3/4	1 7/16	8 5/8	1 1/32	1 2 5/32	81°36'
52°	2 3/8	1 1 1/32	9	2 9/32	9 3/32	1 7/16	8 1 5/16	1 3/32	1 1 3/16	81°24'
51°	2 1 1/32	1 7/16	9 5/16	2 1 1/32	9 7/16	1 5/32	9 1/4	1 1/8	1 2 7/32	81°13'
50°	2 5/16	1 1 7/32	9 2 1/32	2 7/16	9 2 5/32	1 5/32	9 9/16	1 3/16	1 2 9/32	81°02'
49°	2 9/32	1 5/8	10	2 1 7/32	10 1/8	1 5/32	9 2 9/32	1 1/4	1 1 5/16	80°51'
48°	2 1/4	1 2 3/32	10 3/8	2 5/8	10 1 5/32	1 5/32	10 1/4	1 9/32	1 3 1/32	80°40'
47°	2 3/16	1 1 3/16	10 2 3/32	2 2 3/32	10 7/8	1 1/2	10 1 9/32	1 1 1/32	2	80°29'
46°	2 5/32	1 2 9/32	11 3/32	2 1 3/16	11 1/4	1 1/2	10 1 5/16	1 3/8	2 1/16	80°18'
45°	2 1/8	2	11 1 5/32	2 2 9/32	11 2 1/32	1 1/2	11 5/16	1 7/16	2 3/32	80°07'
44°	2 3/32	2 3/32	11 7/8	3	*11 5/16	1 1/2	11 2 3/32	1 1/2	2 1/8	79°57'
43°	2 1/32	2 3/16	*11 3/4	3 1/8	*11 1/2	1 1/2	*11 2 9/32	1 9/16	2 5/32	79°47'
42°	2	2 5/16	*11 1 1/32	3 1/4	*11 1/8	1 1/2	*11 1 7/32	1 1 9/32	2 7/32	79°37'
41°	1 3 1/32	2 7/16	*10 1 5/16	3 3/8	*10 3/4	1 1/2	*11 5/32	1 2 1/32	2 1/4	79°27'
40°	1 1 5/16	2 9/16	*10 9/16	3 1 5/32	*10 3/8	1 1 5/32	*10 1 3/16	1 1 1/16	2 9/32	79°18'
39°	1 7/8	2 2 3/32	*10 3/16	3 1 9/32	*10 1/32	1 1 5/32	*10 1 3/32	1 3/4	2 5/16	79°08'
38°	1 2 7/32	2 2 7/32	*9 7/8	3 3/4	*9 1 1/16	1 1 5/32	*10 1/8	1 1 3/16	2 1 1/32	78°59'
37°	1 1 3/16	3	*9 1/2	3 7/8	*9 5/16	1 1 5/32	*9 3/16	1 7/8	2 3/8	78°50'
36°	1 2 5/32	3 1/8	*9 5/32	4	*9	1 7/16	*9 1 5/32	1 2 9/32	2 1 3/32	78°41'
35°	1 2 3/32	3 5/16	*8 2 7/32	4 5/32	*8 2 1/32	1 7/16	*9 5/32	1 3 1/32	2 7/16	78°32'
34°	1 1 1/16	3 1 5/32	*8 1/2	4 7/16	*8 1 1/32	1 1 3/32	*8 7/8	2	2 1 5/32	78°24'
33°	1 5/8	3 2 1/32	*8 3/16	4 1 5/32	*8 1/32	1 3/8	*8 9/16	2 1/16	2 1/2	78°16'
32°	1 1 9/32	3 2 7/32	*7 7/8	4 2 1/32	*7 3/4	1 3/8	*8 3/32	2 1/8	2 1 7/32	78°08'
31°	1 9/16	4 1/32	*7 1 9/32	4 2 7/32	*7 7/16	1 1 1/32	*8 1/32	2 5/32	2 9/16	78°00'
30°	1 1/2	4 1/4	*7 5/16	5 1/32	*7 5/32	1 5/16	*7 3/4	2 3/16	2 9/16	77°52'
29°	1 1 5/32	4 1 5/32	*7	5 1/4	*6 7/8	1 9/32	*7 1/2	2 1/4	2 1 9/32	77°45'
28°	1 7/16	4 1 1/16	*6 3/4	5 1/2	*6 1 9/32	1 1/4	*7 7/32	2 5/16	2 5/8	77°38'
27°	1 3/8	4 1 5/16	*6 1 5/32	5 2 3/32	*6 5/16	1 1/4	*7	2 1 1/32	2 2 1/32	77°31'
26°	1 5/16	5 7/32	*6 3/16	5 3 1/32	*6 1/32	1 7/32	*6 3/4	2 3/8	2 1 1/16	77°24'
25°	1 9/32	5 1/2	*5 2 9/32	6 1/4	*5 2 5/32	1 5/32	*6 1/2	2 7/16	2 2 3/32	77°18'
24°	1 7/32	5 2 5/32	*5 2 1/32	6 1 7/32	*5 1/2	1 1/8	*6 9/32	2 1 5/32	2 2 3/32	77°12'
23°	1 3/16	6 3/32	*5 1 3/32	6 2 7/32	*5 1/4	1 3/32	*6 1/32	2 1/2	2 3/4	77°07'
22°	1 1/8	6 7/16	*5 1/8	7 3/16	*5	1 1/16	*5 1 3/16	2 1 7/32	2 3/4	77°01'
21°	1 1/16	6 2 7/32	*4 7/8	7 9/16	*4 3/4	1 1/32	*5 5/8	2 1 9/32	2 2 5/32	76°56'
20°	1 1/32	7 9/32	*4 5/8	8	*4 1/2	1	*5 1 3/32	2 5/8	2 1 3/16	76°50'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 4"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	3 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>16</sub>	4 1/8	1 <sup>3</sup> / <sub>8</sub>	4 <sup>5</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	4 1/8	7 <sup>1</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	83°47'
69°	3 <sup>23</sup> / <sub>32</sub>	1/2	4 <sup>1</sup> / <sub>32</sub>	1 <sup>15</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>8</sub>	83°29'
68°	3 <sup>11</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	1 <sup>17</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>16</sub>	1/2	1 <sup>7</sup> / <sub>16</sub>	83°11'
67°	3 <sup>1</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>32</sub>	4 <sup>13</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>	4 <sup>27</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>8</sub>	4 <sup>25</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	82°53'
66°	3 <sup>2</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	1 <sup>13</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>16</sub>	82°36'
65°	3 <sup>5</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	1 <sup>25</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	82°19'
64°	3 <sup>19</sup> / <sub>32</sub>	3/4	5 <sup>1</sup> / <sub>2</sub>	1 <sup>27</sup> / <sub>32</sub>	5 <sup>17</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	82°02'
63°	3 <sup>9</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	5 <sup>25</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>16</sub>	5 <sup>23</sup> / <sub>32</sub>	3/4	1 <sup>1</sup> / <sub>4</sub>	81°45'
62°	3 <sup>17</sup> / <sub>32</sub>	7/8	6	2 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	1 <sup>19</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>32</sub>	81°28'
61°	3 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>32</sub>	7/8	1 <sup>7</sup> / <sub>8</sub>	81°11'
60°	3 <sup>15</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>16</sub>	6 <sup>9</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	6 <sup>15</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	80°54'
59°	3 <sup>7</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>4</sub>	2 <sup>9</sup> / <sub>32</sub>	6 <sup>27</sup> / <sub>32</sub>	1 <sup>23</sup> / <sub>32</sub>	6 <sup>23</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	80°37'
58°	3 <sup>13</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	7	2 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>4</sub>	6 <sup>3</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	80°21'
57°	3 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	7 <sup>9</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>8</sub>	1 <sup>25</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	80°05'
56°	3 <sup>5</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>32</sub>	7 <sup>9</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	1 <sup>13</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	79°49'
55°	3 <sup>9</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>16</sub>	7 <sup>27</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	1 <sup>27</sup> / <sub>32</sub>	7 <sup>25</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	79°33'
54°	3 <sup>7</sup> / <sub>32</sub>	1 <sup>17</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>4</sub>	8 <sup>9</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	79°17'
53°	3 <sup>3</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>	8 <sup>13</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>8</sub>	8 <sup>19</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	79°01'
52°	3 <sup>5</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>4</sub>	8 <sup>23</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	8 <sup>29</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>8</sub>	1 <sup>13</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>8</sub>	78°45'
51°	3 <sup>1</sup> / <sub>8</sub>	1 <sup>2</sup> / <sub>32</sub>	9	3 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	8 <sup>15</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	78°30'
50°	3 <sup>1</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	9 <sup>9</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>32</sub>	1 <sup>17</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	78°16'
49°	3 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	9 <sup>23</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>32</sub>	1 <sup>19</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	78°01'
48°	2 <sup>3</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>32</sub>	9 <sup>27</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	77°47'
47°	2 <sup>15</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>32</sub>	10 <sup>9</sup> / <sub>8</sub>	3 <sup>17</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>16</sub>	1 <sup>23</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	77°33'
46°	2 <sup>7</sup> / <sub>8</sub>	2 <sup>13</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>4</sub>	3 <sup>2</sup> / <sub>32</sub>	11	2	10 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	77°19'
45°	2 <sup>27</sup> / <sub>32</sub>	2 <sup>17</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>32</sub>	3 <sup>25</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>8</sub>	2	10 <sup>27</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>4</sub>	77°05'
44°	2 <sup>23</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>16</sub>	11 <sup>13</sup> / <sub>16</sub>	2	11 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	76°51'
43°	2 <sup>23</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>16</sub>	11 <sup>29</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	*11 <sup>25</sup> / <sub>32</sub>	2	11 <sup>9</sup> / <sub>16</sub>	2	2 <sup>27</sup> / <sub>32</sub>	76°38'
42°	2 <sup>1</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>8</sub>	2	11 <sup>15</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	2 <sup>29</sup> / <sub>32</sub>	76°25'
41°	2 <sup>5</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>8</sub>	*11	2	*11 <sup>1</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	76°12'
40°	2 <sup>9</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	*10 <sup>15</sup> / <sub>16</sub>	4 <sup>17</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	3	75°59'
39°	2 <sup>1</sup> / <sub>2</sub>	3 <sup>15</sup> / <sub>32</sub>	*10 <sup>9</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	*10 <sup>7</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	*11	2 <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	75°47'
38°	2 <sup>15</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>8</sub>	*10 <sup>3</sup> / <sub>16</sub>	4 <sup>27</sup> / <sub>32</sub>	*9 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>32</sub>	*10 <sup>2</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	75°35'
37°	2 <sup>13</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	*9 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>32</sub>	*9 <sup>17</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>8</sub>	75°23'
36°	2 <sup>1</sup> / <sub>32</sub>	4	*9 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>32</sub>	*9 <sup>9</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	*10 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	3 <sup>9</sup> / <sub>16</sub>	75°11'
35°	2 <sup>9</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>	*9 <sup>5</sup> / <sub>32</sub>	5 <sup>13</sup> / <sub>32</sub>	*8 <sup>27</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	*9 <sup>23</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	74°59'
34°	2 <sup>1</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>16</sub>	*8 <sup>13</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	*8 <sup>17</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	*9 <sup>7</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	74°48'
33°	2 <sup>3</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>2</sub>	5 <sup>27</sup> / <sub>32</sub>	*8 <sup>3</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>	*9 <sup>9</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	74°37'
32°	2 <sup>1</sup> / <sub>8</sub>	4 <sup>29</sup> / <sub>32</sub>	*8 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	*7 <sup>29</sup> / <sub>32</sub>	1 <sup>27</sup> / <sub>32</sub>	*8 <sup>27</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>32</sub>	74°26'
31°	2 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>	*7 <sup>7</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>16</sub>	*7 <sup>19</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	*8 <sup>19</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	74°16'
30°	2	5 <sup>13</sup> / <sub>32</sub>	*7 <sup>9</sup> / <sub>32</sub>	6 <sup>9</sup> / <sub>16</sub>	*7 <sup>5</sup> / <sub>16</sub>	1 <sup>25</sup> / <sub>32</sub>	*8 <sup>5</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>8</sub>	3 <sup>13</sup> / <sub>32</sub>	74°06'
29°	1 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	*7 <sup>5</sup> / <sub>16</sub>	6 <sup>27</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>4</sub>	*8 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	73°57'
28°	1 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>32</sub>	*7	7 <sup>1</sup> / <sub>8</sub>	*6 <sup>3</sup> / <sub>4</sub>	1 <sup>23</sup> / <sub>32</sub>	*7 <sup>3</sup> / <sub>16</sub>	3	3 <sup>1</sup> / <sub>2</sub>	73°48'
27°	1 <sup>13</sup> / <sub>16</sub>	6 <sup>9</sup> / <sub>32</sub>	*6 <sup>23</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	*6 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	*7 <sup>19</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>17</sup> / <sub>32</sub>	73°39'
26°	1 <sup>3</sup> / <sub>4</sub>	6 <sup>5</sup> / <sub>8</sub>	*6 <sup>7</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>4</sub>	*6 <sup>3</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>	*7 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>9</sup> / <sub>16</sub>	73°30'
25°	1 <sup>1</sup> / <sub>16</sub>	7	*6 <sup>5</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>8</sub>	*5 <sup>29</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>16</sub>	3 <sup>19</sup> / <sub>32</sub>	73°21'
24°	1 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>32</sub>	*5 <sup>7</sup> / <sub>8</sub>	8 <sup>17</sup> / <sub>32</sub>	*5 <sup>5</sup> / <sub>8</sub>	1 <sup>17</sup> / <sub>32</sub>	*6 <sup>29</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>4</sub>	3 <sup>5</sup> / <sub>8</sub>	73°13'
23°	1 <sup>9</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>4</sub>	*5 <sup>5</sup> / <sub>8</sub>	8 <sup>15</sup> / <sub>16</sub>	*5 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	*6 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>32</sub>	73°05'
22°	1 <sup>1</sup> / <sub>2</sub>	8 <sup>7</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>16</sub>	*6 <sup>15</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	72°57'
21°	1 <sup>7</sup> / <sub>16</sub>	8 <sup>23</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>8</sub>	*4 <sup>27</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	*6 <sup>9</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	72°50'
20°	1 <sup>3</sup> / <sub>8</sub>	9 <sup>9</sup> / <sub>32</sub>	*4 <sup>13</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>16</sub>	*4 <sup>9</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	*6 <sup>3</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	72°43'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 5"

ANGLE D IN PLAN	R1 °	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	4 1 1/16	1 7/32	4	1 1 1/16	4 1/32	1 1/2	4	1/2	1 1 3/32	82°26'
69°	4 2 1/32	1 9/32	4 7/32	1 2 5/32	4 1/4	1 9/16	4 7/32	9/16	1 2 1/32	82°04'
68°	4 5/8	2 1/32	4 7/16	1 7/8	4 1 5/32	1 5/8	4 7/16	5/8	1 3/4	81°42'
67°	4 1 9/32	2 3/32	4 2 1/32	1 3 1/32	4 1 1/16	1 1 1/16	4 2 1/32	2 1/32	1 1 3/16	81°21'
66°	4 9/16	2 5/32	4 7/8	2 1/16	4 1 5/16	1 3/4	4 7/8	2 3/32	1 2 3/32	81°00'
65°	4 1 7/32	2 7/32	5 3/32	2 5/32	5 5/32	1 1 3/16	5 3/32	2 5/32	1 3 1/32	80°39'
64°	4 1/2	2 9/32	5 5/16	2 1/4	5 1 3/32	1 7/8	5 5/16	2 7/32	2 1/16	80°18'
63°	4 1 5/32	1	5 9/16	2 1 1/32	5 2 1/32	1 1 5/16	5 1 7/32	2 9/32	2 1/8	79°57'
62°	4 7/16	1 1/16	5 1 3/16	2 7/16	5 7/8	1 3 1/32	5 2 5/32	3 1/32	2 3/16	79°36'
61°	4 3/8	1 1/8	6 1/32	2 9/16	6 1/8	2 1/32	6	1 1/32	2 9/32	79°15'
60°	4 1 1/32	1 7/32	6 9/32	2 2 1/32	6 1 3/32	2 1/16	6 1/4	1 3/32	2 1 1/32	78°55'
59°	4 9/32	1 5/16	6 1 7/32	2 2 5/32	6 2 1/32	2 1/8	6 1/2	1 5/32	2 1 3/32	78°35'
58°	4 1/4	1 1 3/32	6 2 5/32	2 7/8	6 1 5/16	2 5/32	6 2 3/32	1 7/32	2 1/2	78°15'
57°	4 3/16	1 1/2	7 1/32	3	7 3/16	2 7/32	6 3 1/32	1 9/32	2 9/16	77°55'
56°	4 5/32	1 5/8	7 5/16	3 3/32	7 1 5/32	2 1/4	7 1/4	1 3/8	2 5/8	77°35'
55°	4 3/32	1 2 3/32	7 9/16	3 7/32	7 3/4	2 9/32	7 1/2	1 7/16	2 2 3/32	77°15'
54°	4 1/32	1 2 7/32	7 2 7/32	3 1 1/32	8 1/16	2 5/16	7 3/4	1 1 7/32	2 2 5/32	76°56'
53°	4	1 1 5/16	8 1/8	3 1 5/32	8 1 1/32	2 1 1/32	8	1 1 9/32	2 2 7/32	76°37'
52°	3 1 5/16	2 1/16	8 1 3/32	3 1 9/32	8 2 1/32	2 3/8	8 9/32	1 1 1/16	2 1 5/16	76°18'
51°	3 2 3/32	2 3/16	8 2 3/32	3 2 3/32	8 3 1/32	2 3/8	8 9/16	1 3/4	3	75°59'
50°	3 2 7/32	2 5/16	9	3 7/8	9 9/32	2 1 3/32	8 2 7/32	1 2 7/32	3 1/16	75°41'
49°	3 2 5/32	2 7/16	9 5/16	4	9 5/8	2 7/16	9 1/8	1 2 9/32	3 1/8	75°23'
48°	3 2 3/32	2 9/16	9 3/8	4 5/32	9 3 1/32	2 7/16	9 7/16	2	3 3/16	75°05'
47°	3 2 1/32	2 2 3/32	9 3 1/32	4 5/16	10 5/16	2 1 5/32	9 2 3/32	2 3/32	3 1/4	74°47'
46°	3 1 9/32	2 7/8	10 5/16	4 1 5/32	10 1 1/16	2 1 5/32	10 1/32	2 3/16	3 1 1/32	74°30'
45°	3 1 7/32	3	10 2 1/32	4 5/8	11 1/16	2 1/2	10 1 1/32	2 1/4	3 1 3/32	74°13'
44°	3 1 5/32	3 5/32	11 1/32	4 2 5/32	11 7/16	2 1/2	10 2 1/32	2 1 1/32	3 1 5/32	73°56'
43°	3 1 3/32	3 1/16	11 7/16	4 3 1/32	11 7/8	2 1/2	10 3 1/32	2 7/16	3 1 7/32	73°40'
42°	3 1 1/32	3 1/2	11 1 3/16	5 1/8	*11 2 3/32	2 1/2	11 5/16	2 1/2	3 9/16	73°24'
41°	3 9/32	3 1 1/16	*11 1 3/16	5 5/16	*11 5/16	2 1/2	11 2 1/32	2 1 9/32	3 5/8	73°08'
40°	3 7/32	3 7/8	*11 1 3/32	5 1/2	*10 2 9/32	2 1/2	12	2 1 1/16	3 1 1/16	72°52'
39°	3 5/32	4 1/16	*11 1/32	5 1 1/16	*10 1 7/32	2 1/2	*11 2 1/32	2 2 5/32	3 3/4	72°37'
38°	3 3/32	4 3/32	*10 2 1/32	5 2 9/32	*10 5/32	2 1 5/32	*11 5/16	2 2 7/32	3 1 3/16	72°22'
37°	3 3/32	4 1/2	*10 9/32	6 1/8	*9 1 3/16	2 1 5/32	*11	2 1 5/16	3 7/8	72°07'
36°	2 1 5/16	4 3/4	*9 1 5/16	6 1 1/32	*9 1 5/32	2 7/16	*10 1 1/16	3 1/32	3 1 5/16	71°52'
35°	2 7/8	4 3 1/32	*9 1 9/32	6 1 9/32	*9 3/32	2 1 3/32	*10 3/8	3 1/8	3 3 1/32	71°38'
34°	2 1 3/16	5 1/4	*9 1/4	6 2 7/32	*8 2 5/32	2 3/8	*10 3/32	3 7/32	4 1/32	71°25'
33°	2 2 3/32	5 1/2	*8 2 9/32	7 3/32	*8 7/16	2 1 1/32	*9 1 3/16	3 9/32	4 3/32	71°12'
32°	2 2 1/32	5 2 5/32	*8 1 9/32	7 3/8	*8 1/8	2 5/16	*9 9/16	3 3/8	4 1/8	70°59'
31°	2 1 9/32	6 1/16	*8 9/32	7 1 1/16	*7 1 3/16	2 9/32	*9 9/32	3 1 7/32	4 3/16	70°46'
30°	2 1/2	6 3/8	*7 3 1/32	8	*7 1/2	2 1/4	*9 1/32	3 1 7/32	4 1/4	70°33'
29°	2 7/16	6 1 1/16	*7 2 1/32	8 5/16	*7 7/32	2 1/32	*8 2 5/32	3 5/8	4 3/32	70°21'
28°	2 1 1/32	7 1/32	*7 3/8	8 1 1/16	*6 2 9/32	2 3/32	*8 1 7/32	3 1 1/16	4 1 1/32	70°09'
27°	2 9/32	7 1 3/32	*7 1/16	9 1/16	*6 5/8	2 1/8	*8 9/32	3 2 5/32	4 3/8	69°58'
26°	2 3/16	7 1 3/16	*6 3/4	9 1 5/32	*6 3/8	2 1/16	*8 1/16	3 2 1/32	4 1 3/32	69°47'
25°	2 1/8	8 9/32	*6 1 5/32	9 2 9/32	*6 1/16	2	*7 2 7/32	3 1 5/16	4 1 5/32	69°36'
24°	2 1/32	8 3/4	*6 3/16	10 3/8	*5 1 3/16	1 3 1/32	*7 9/8	4	4 1/2	69°26'
23°	1 1 5/16	9 1/4	*5 2 9/32	10 7/8	*5 1 7/32	1 2 9/32	*7 7/16	4 1/16	4 1 7/32	69°16'
22°	1 7/8	9 3/4	*5 5/8	11 7/16	*5 1/4	1 2 7/32	*7 1/4	4 5/32	4 1 9/32	69°07'
21°	1 1 3/16	10 3/8	*5 1 1/32	*11 1 5/16	*5	1 2 5/32	*7 1/16	4 7/32	4 5/8	68°58'
20°	1 2 3/32	11	*5 1/16	*11 1 1/32	*4 2 3/32	1 2 3/32	*6 7/8	4 9/32	4 2 1/32	68°49'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 6"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	5 <sup>5</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>32</sub>	3 <sup>29</sup> / <sub>32</sub>	1 <sup>25</sup> / <sub>32</sub>	3 <sup>27</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	1 <sup>27</sup> / <sub>32</sub>	81°12'
69°	5 <sup>19</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	1 <sup>27</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	5 <sup>8</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	80°46'
68°	5 <sup>7</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	80°21'
67°	5 <sup>17</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	2	4 <sup>15</sup> / <sub>32</sub>	3 <sup>4</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>8</sub>	79°56'
66°	5 <sup>15</sup> / <sub>32</sub>	7 <sup>8</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>	4 <sup>25</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	79°31'
65°	5 <sup>7</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	4 <sup>29</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	5	2 <sup>1</sup> / <sub>8</sub>	4 <sup>29</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	79°06'
64°	5 <sup>13</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>	1 <sup>5</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>32</sub>	78°41'
63°	5 <sup>11</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	5 <sup>11</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	5 <sup>15</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>4</sub>	5 <sup>11</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	78°17'
62°	5 <sup>9</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	5 <sup>9</sup> / <sub>16</sub>	2 <sup>27</sup> / <sub>32</sub>	5 <sup>23</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	5 <sup>9</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	77°53'
61°	5 <sup>1</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>32</sub>	5 <sup>13</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>8</sub>	5 <sup>25</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	2 <sup>21</sup> / <sub>32</sub>	77°29'
60°	5 <sup>3</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	6	1 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub>	77°05'
59°	5 <sup>5</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	2 <sup>27</sup> / <sub>32</sub>	76°41'
58°	5 <sup>9</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>2</sub>	3 <sup>11</sup> / <sub>32</sub>	6 <sup>11</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	6 <sup>15</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>16</sub>	76°17'
57°	5 <sup>13</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	6 <sup>11</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>	3	75°54'
56°	4 <sup>3</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	7	3 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	2 <sup>21</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	75°31'
55°	4 <sup>29</sup> / <sub>32</sub>	1 <sup>15</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	2 <sup>11</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>16</sub>	1 <sup>2</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	75°08'
54°	4 <sup>7</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>16</sub>	7 <sup>17</sup> / <sub>32</sub>	3 <sup>29</sup> / <sub>32</sub>	7 <sup>13</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>4</sub>	7 <sup>13</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>4</sub>	3 <sup>9</sup> / <sub>32</sub>	74°46'
53°	4 <sup>13</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	7 <sup>25</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>32</sub>	2 <sup>25</sup> / <sub>32</sub>	7 <sup>21</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>32</sub>	74°24'
52°	4 <sup>23</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	8 <sup>13</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>16</sub>	7 <sup>29</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	74°02'
51°	4 <sup>21</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	8 <sup>11</sup> / <sub>32</sub>	4 <sup>11</sup> / <sub>32</sub>	8 <sup>23</sup> / <sub>32</sub>	2 <sup>27</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>32</sub>	2	3 <sup>17</sup> / <sub>32</sub>	73°40'
50°	4 <sup>19</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	9	2 <sup>7</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	73°18'
49°	4 <sup>17</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	8 <sup>15</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	8 <sup>11</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>16</sub>	72°57'
48°	4 <sup>15</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>32</sub>	4 <sup>27</sup> / <sub>32</sub>	9 <sup>2</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	3 <sup>25</sup> / <sub>32</sub>	72°36'
47°	4 <sup>13</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	9 <sup>17</sup> / <sub>32</sub>	5	10	2 <sup>15</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>	3 <sup>27</sup> / <sub>32</sub>	72°15'
46°	4 <sup>5</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	9 <sup>27</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>2</sub>	3 <sup>15</sup> / <sub>16</sub>	71°54'
45°	4 <sup>1</sup> / <sub>4</sub>	3 <sup>13</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>8</sub>	10 <sup>23</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	9 <sup>13</sup> / <sub>16</sub>	2 <sup>19</sup> / <sub>32</sub>	4	71°34'
44°	4 <sup>3</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>16</sub>	11 <sup>3</sup> / <sub>32</sub>	3	10 <sup>3</sup> / <sub>32</sub>	2 <sup>11</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	71°14'
43°	4 <sup>9</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	10 <sup>7</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	3	10 <sup>3</sup> / <sub>8</sub>	2 <sup>13</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>32</sub>	70°55'
42°	4 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	11 <sup>7</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	11 <sup>29</sup> / <sub>32</sub>	3	10 <sup>11</sup> / <sub>16</sub>	2 <sup>29</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>	70°36'
41°	3 <sup>15</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>32</sub>	11 <sup>19</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	*11 <sup>11</sup> / <sub>16</sub>	3	11	3	4 <sup>9</sup> / <sub>16</sub>	70°17'
40°	3 <sup>27</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	12	6 <sup>13</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>4</sub>	3	11 <sup>9</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	69°58'
39°	3 <sup>25</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	*11 <sup>19</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	*10 <sup>7</sup> / <sub>8</sub>	3	11 <sup>19</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	69°40'
38°	3 <sup>11</sup> / <sub>16</sub>	4 <sup>27</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>8</sub>	*10 <sup>15</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	11 <sup>29</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>16</sub>	4 <sup>17</sup> / <sub>32</sub>	69°22'
37°	3 <sup>5</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>32</sub>	*10 <sup>13</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>4</sub>	3 <sup>13</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	69°05'
36°	3 <sup>17</sup> / <sub>32</sub>	5 <sup>11</sup> / <sub>32</sub>	*10 <sup>15</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>8</sub>	*9 <sup>3</sup> / <sub>4</sub>	2 <sup>15</sup> / <sub>16</sub>	*11 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	4 <sup>21</sup> / <sub>32</sub>	68°48'
35°	3 <sup>7</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	*10 <sup>3</sup> / <sub>32</sub>	7 <sup>21</sup> / <sub>32</sub>	*9 <sup>13</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>8</sub>	4 <sup>23</sup> / <sub>32</sub>	68°31'
34°	3 <sup>3</sup> / <sub>8</sub>	5 <sup>29</sup> / <sub>32</sub>	*9 <sup>23</sup> / <sub>32</sub>	7 <sup>15</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>8</sub>	*10 <sup>7</sup> / <sub>8</sub>	3 <sup>23</sup> / <sub>32</sub>	4 <sup>25</sup> / <sub>32</sub>	68°15'
33°	3 <sup>9</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>16</sub>	*9 <sup>3</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	*8 <sup>3</sup> / <sub>4</sub>	2 <sup>27</sup> / <sub>32</sub>	*10 <sup>19</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	4 <sup>27</sup> / <sub>32</sub>	67°59'
32°	3 <sup>3</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	*9 <sup>1</sup> / <sub>32</sub>	8 <sup>9</sup> / <sub>16</sub>	*8 <sup>3</sup> / <sub>8</sub>	2 <sup>13</sup> / <sub>16</sub>	*10 <sup>5</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	4 <sup>29</sup> / <sub>32</sub>	67°43'
31°	3 <sup>3</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>8</sub>	*8 <sup>23</sup> / <sub>32</sub>	8 <sup>15</sup> / <sub>16</sub>	*8 <sup>1</sup> / <sub>16</sub>	2 <sup>25</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	67°28'
30°	3	7 <sup>3</sup> / <sub>16</sub>	*8 <sup>13</sup> / <sub>32</sub>	9 <sup>5</sup> / <sub>16</sub>	*7 <sup>3</sup> / <sub>4</sub>	2 <sup>23</sup> / <sub>32</sub>	*9 <sup>13</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>32</sub>	67°13'
29°	2 <sup>29</sup> / <sub>32</sub>	7 <sup>9</sup> / <sub>16</sub>	*8 <sup>1</sup> / <sub>16</sub>	9 <sup>21</sup> / <sub>32</sub>	*7 <sup>7</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	*9 <sup>9</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	66°59'
28°	2 <sup>13</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>32</sub>	*7 <sup>3</sup> / <sub>4</sub>	10 <sup>3</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>8</sub>	*9 <sup>5</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>32</sub>	66°45'
27°	2 <sup>23</sup> / <sub>32</sub>	8 <sup>13</sup> / <sub>32</sub>	*7 <sup>7</sup> / <sub>16</sub>	10 <sup>17</sup> / <sub>32</sub>	*6 <sup>27</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	*9 <sup>9</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>32</sub>	66°31'
26°	2 <sup>5</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>8</sub>	*7 <sup>1</sup> / <sub>8</sub>	11	*6 <sup>9</sup> / <sub>16</sub>	2 <sup>17</sup> / <sub>32</sub>	*8 <sup>7</sup> / <sub>8</sub>	4 <sup>17</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	66°18'
25°	2 <sup>17</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>32</sub>	*6 <sup>27</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>2</sub>	*6 <sup>1</sup> / <sub>4</sub>	2 <sup>15</sup> / <sub>32</sub>	*8 <sup>21</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	66°05'
24°	2 <sup>7</sup> / <sub>16</sub>	9 <sup>27</sup> / <sub>32</sub>	*6 <sup>17</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>16</sub>	*6	2 <sup>13</sup> / <sub>32</sub>	*8 <sup>15</sup> / <sub>32</sub>	4 <sup>23</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>8</sub>	65°53'
23°	2 <sup>11</sup> / <sub>32</sub>	10 <sup>13</sup> / <sub>32</sub>	*6 <sup>7</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>8</sub>	*5 <sup>11</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>4</sub>	4 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>32</sub>	65°42'
22°	2 <sup>1</sup> / <sub>4</sub>	11	*5 <sup>15</sup> / <sub>16</sub>	*10 <sup>27</sup> / <sub>32</sub>	*5 <sup>17</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>4</sub>	*8 <sup>1</sup> / <sub>8</sub>	4 <sup>29</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>32</sub>	65°31'
21°	2 <sup>5</sup> / <sub>32</sub>	11 <sup>11</sup> / <sub>16</sub>	*5 <sup>21</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>16</sub>	*5 <sup>5</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>16</sub>	*7 <sup>29</sup> / <sub>32</sub>	5	5 <sup>1</sup> / <sub>2</sub>	65°20'
20°	2 <sup>1</sup> / <sub>16</sub>	*11 <sup>5</sup> / <sub>8</sub>	*5 <sup>3</sup> / <sub>8</sub>	*9 <sup>25</sup> / <sub>32</sub>	*4 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>32</sub>	*7 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>16</sub>	5 <sup>9</sup> / <sub>16</sub>	65°09'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 7"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	6 <sup>9</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	3 <sup>23</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>16</sub>	3 <sup>25</sup> / <sub>32</sub>	2	3 <sup>23</sup> / <sub>32</sub>	5/8	2 <sup>3</sup> / <sub>32</sub>	80°04'
69°	6 <sup>17</sup> / <sub>32</sub>	2 <sup>6</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>16</sub>	3 <sup>31</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	3 <sup>26</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	79°36'
68°	6 <sup>15</sup> / <sub>32</sub>	2 <sup>6</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	3/4	2 <sup>7</sup> / <sub>16</sub>	79°07'
67°	6 <sup>7</sup> / <sub>16</sub>	7/8	4 <sup>5</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	4 <sup>13</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>32</sub>	78°39'
66°	6 <sup>13</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	2 <sup>11</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	2 <sup>11</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>2</sub>	7/8	2 <sup>1</sup> / <sub>2</sub>	78°10'
65°	6 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	4 <sup>23</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>16</sub>	4 <sup>27</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	77°42'
64°	6 <sup>9</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>	4 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>2</sub>	4 <sup>26</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	2 <sup>23</sup> / <sub>32</sub>	77°14'
63°	6 <sup>1</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>8</sub>	2 <sup>13</sup> / <sub>16</sub>	76°46'
62°	6 <sup>9</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	5 <sup>17</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	76°19'
61°	6 <sup>1</sup> / <sub>8</sub>	1 <sup>13</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	2 <sup>2</sup> / <sub>32</sub>	5 <sup>17</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	75°52'
60°	6 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	5 <sup>25</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	6	2 <sup>25</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>8</sub>	75°24'
59°	6	1 <sup>5</sup> / <sub>8</sub>	6	3 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>4</sub>	2 <sup>2</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	74°57'
58°	5 <sup>15</sup> / <sub>16</sub>	1 <sup>23</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>32</sub>	3 <sup>25</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>2</sub>	2 <sup>15</sup> / <sub>16</sub>	6 <sup>9</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>16</sub>	74°31'
57°	5 <sup>7</sup> / <sub>8</sub>	1 <sup>2</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>32</sub>	6 <sup>13</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	3 <sup>13</sup> / <sub>32</sub>	74°04'
56°	5 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	7	3 <sup>1</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	1 <sup>23</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	73°38'
55°	5 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>32</sub>	6 <sup>2</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	73°12'
54°	5 <sup>2</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>8</sub>	7 <sup>17</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	1 <sup>2</sup> / <sub>32</sub>	3 <sup>23</sup> / <sub>32</sub>	72°46'
53°	5 <sup>19</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	7 <sup>7</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	72°21'
52°	5 <sup>1</sup> / <sub>2</sub>	2 <sup>17</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>4</sub>	7 <sup>17</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>8</sub>	3 <sup>29</sup> / <sub>32</sub>	71°56'
51°	5 <sup>1</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	7 <sup>15</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>32</sub>	7 <sup>25</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	4	71°32'
50°	5 <sup>5</sup> / <sub>8</sub>	2 <sup>13</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	8	2 <sup>5</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>32</sub>	71°06'
49°	5 <sup>9</sup> / <sub>32</sub>	3	8 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>4</sub>	9	3 <sup>3</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	70°42'
48°	5 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	8 <sup>25</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	70°18'
47°	5 <sup>1</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	9 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>4</sub>	2 <sup>2</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	69°54'
46°	5 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>8</sub>	5 <sup>13</sup> / <sub>16</sub>	10	3 <sup>7</sup> / <sub>16</sub>	9	2 <sup>25</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>2</sub>	69°32'
45°	4 <sup>15</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>4</sub>	2 <sup>7</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>16</sub>	69°08'
44°	4 <sup>7</sup> / <sub>8</sub>	3 <sup>7</sup> / <sub>8</sub>	10	6 <sup>1</sup> / <sub>4</sub>	10 <sup>23</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>2</sub>	3	4 <sup>2</sup> / <sub>32</sub>	68°45'
43°	4 <sup>25</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	9 <sup>25</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>4</sub>	68°23'
42°	4 <sup>1</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>16</sub>	6 <sup>23</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	4 <sup>27</sup> / <sub>32</sub>	68°00'
41°	4 <sup>13</sup> / <sub>32</sub>	4 <sup>17</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	11 <sup>29</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	10 <sup>9</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>16</sub>	67°39'
40°	4 <sup>1</sup> / <sub>2</sub>	4 <sup>25</sup> / <sub>32</sub>	11 <sup>13</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>32</sub>	*11 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	10 <sup>19</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	67°18'
39°	4 <sup>13</sup> / <sub>32</sub>	5	11 <sup>25</sup> / <sub>32</sub>	7 <sup>15</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	10 <sup>27</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>8</sub>	66°58'
38°	4 <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>4</sub>	*11 <sup>2</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>4</sub>	*10 <sup>27</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	66°36'
37°	4 <sup>7</sup> / <sub>32</sub>	5 <sup>17</sup> / <sub>32</sub>	*11 <sup>7</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>32</sub>	*10 <sup>15</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>	11 <sup>13</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	5 <sup>9</sup> / <sub>32</sub>	66°16'
36°	4 <sup>1</sup> / <sub>8</sub>	5 <sup>13</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>16</sub>	8 <sup>5</sup> / <sub>16</sub>	*10 <sup>5</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	65°56'
35°	4	6 <sup>1</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>16</sub>	8 <sup>5</sup> / <sub>8</sub>	*9 <sup>23</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	*12	4 <sup>1</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>16</sub>	65°37'
34°	3 <sup>29</sup> / <sub>32</sub>	6 <sup>13</sup> / <sub>32</sub>	*10 <sup>9</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>32</sub>	*9 <sup>3</sup> / <sub>8</sub>	3 <sup>13</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	5 <sup>17</sup> / <sub>32</sub>	65°18'
33°	3 <sup>13</sup> / <sub>16</sub>	6 <sup>23</sup> / <sub>32</sub>	*9 <sup>15</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>8</sub>	*11 <sup>7</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	5 <sup>19</sup> / <sub>32</sub>	65°00'
32°	3 <sup>25</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	*9 <sup>19</sup> / <sub>32</sub>	9 <sup>2</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	*11 <sup>5</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	64°41'
31°	3 <sup>5</sup> / <sub>8</sub>	7 <sup>7</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>16</sub>	*8 <sup>1</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>32</sub>	*10 <sup>29</sup> / <sub>32</sub>	4 <sup>17</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	64°24'
30°	3 <sup>1</sup> / <sub>2</sub>	7 <sup>27</sup> / <sub>32</sub>	*8 <sup>25</sup> / <sub>32</sub>	10 <sup>15</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	*10 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>16</sub>	64°08'
29°	3 <sup>13</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>32</sub>	*8 <sup>9</sup> / <sub>16</sub>	10 <sup>29</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>32</sub>	4 <sup>25</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>8</sub>	63°52'
28°	3 <sup>9</sup> / <sub>32</sub>	8 <sup>23</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>8</sub>	*7 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>8</sub>	*10 <sup>10</sup> / <sub>16</sub>	4 <sup>29</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	63°36'
27°	3 <sup>3</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>8</sub>	*7 <sup>15</sup> / <sub>16</sub>	11 <sup>27</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	*9 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	63°20'
26°	3 <sup>1</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>8</sub>	*7 <sup>5</sup> / <sub>8</sub>	*11 <sup>5</sup> / <sub>8</sub>	*6 <sup>25</sup> / <sub>32</sub>	3	*9 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	63°06'
25°	2 <sup>3</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>32</sub>	*7 <sup>9</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>32</sub>	*6 <sup>15</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>16</sub>	*9 <sup>17</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	6 <sup>5</sup> / <sub>32</sub>	62°50'
24°	2 <sup>2</sup> / <sub>32</sub>	10 <sup>23</sup> / <sub>32</sub>	*6 <sup>3</sup> / <sub>32</sub>	*10 <sup>19</sup> / <sub>32</sub>	*6 <sup>3</sup> / <sub>16</sub>	2 <sup>27</sup> / <sub>32</sub>	*9 <sup>5</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>32</sub>	62°37'
23°	2 <sup>23</sup> / <sub>32</sub>	11 <sup>5</sup> / <sub>16</sub>	*6 <sup>2</sup> / <sub>32</sub>	*10 <sup>3</sup> / <sub>32</sub>	*5 <sup>7</sup> / <sub>8</sub>	2 <sup>26</sup> / <sub>32</sub>	*9 <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	6 <sup>9</sup> / <sub>32</sub>	62°24'
22°	2 <sup>5</sup> / <sub>8</sub>	12	*6 <sup>3</sup> / <sub>8</sub>	*9 <sup>5</sup> / <sub>8</sub>	*5 <sup>5</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>16</sub>	*8 <sup>3</sup> / <sub>32</sub>	5 <sup>19</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	62°10'
21°	2 <sup>17</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>32</sub>	*6 <sup>1</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>8</sub>	*5 <sup>1</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	*8 <sup>25</sup> / <sub>32</sub>	5 <sup>23</sup> / <sub>32</sub>	6 <sup>13</sup> / <sub>32</sub>	61°56'
20°	2 <sup>13</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>16</sub>	*5 <sup>3</sup> / <sub>4</sub>	*8 <sup>2</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>2</sub>	*8 <sup>5</sup> / <sub>8</sub>	5 <sup>13</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>16</sub>	61°44'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 8"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	7 <sup>17</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>6</sub>	3 <sup>9</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>8</sub>	3 <sup>9</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	79°04'
69°	7 <sup>15</sup> / <sub>32</sub>	3 <sup>4</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>	2 <sup>9</sup> / <sub>16</sub>	3 <sup>27</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	78°32'
68°	7 <sup>7</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	78°00'
67°	7 <sup>3</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	2 <sup>13</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>8</sub>	7 <sup>8</sup> / <sub>8</sub>	2 <sup>2</sup> / <sub>32</sub>	77°29'
66°	7 <sup>5</sup> / <sub>16</sub>	1	4 <sup>5</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	2 <sup>25</sup> / <sub>32</sub>	76°57'
65°	7 <sup>1</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>32</sub>	4 <sup>17</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	76°26'
64°	7 <sup>3</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>8</sub>	2 <sup>25</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	3	75°51'
63°	7 <sup>1</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>8</sub>	4 <sup>29</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	75°24'
62°	7 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>8</sub>	3 <sup>17</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>4</sub>	74°52'
61°	7	1 <sup>15</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>17</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	74°24'
60°	6 <sup>15</sup> / <sub>16</sub>	1 <sup>19</sup> / <sub>32</sub>	5 <sup>17</sup> / <sub>32</sub>	3 <sup>27</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>2</sub>	1 <sup>7</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>32</sub>	73°53'
59°	6 <sup>7</sup> / <sub>8</sub>	1 <sup>23</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	4	6	3 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	1 <sup>17</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>16</sub>	73°24'
58°	6 <sup>25</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>32</sub>	5 <sup>29</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	72°55'
57°	6 <sup>23</sup> / <sub>32</sub>	1 <sup>15</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	3 <sup>11</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	1 <sup>23</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	72°25'
56°	6 <sup>5</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>32</sub>	6 <sup>13</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>4</sub>	3 <sup>13</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>16</sub>	1 <sup>27</sup> / <sub>32</sub>	3 <sup>29</sup> / <sub>32</sub>	71°56'
55°	6 <sup>9</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	4 <sup>2</sup> / <sub>32</sub>	7	3 <sup>15</sup> / <sub>32</sub>	6 <sup>17</sup> / <sub>32</sub>	1 <sup>15</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	71°27'
54°	6 <sup>15</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>8</sub>	4 <sup>27</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>4</sub>	3 <sup>17</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	70°58'
53°	6 <sup>1</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	7 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	7 <sup>17</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>4</sub>	70°29'
52°	6 <sup>5</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>32</sub>	7 <sup>13</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	70°02'
51°	6 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	7 <sup>9</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>32</sub>	3 <sup>23</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>8</sub>	2 <sup>13</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	69°34'
50°	6 <sup>1</sup> / <sub>8</sub>	3	7 <sup>13</sup> / <sub>16</sub>	5 <sup>19</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>	7 <sup>19</sup> / <sub>32</sub>	2 <sup>17</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	69°06'
49°	6 <sup>1</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>16</sub>	5 <sup>19</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>16</sub>	7 <sup>15</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>16</sub>	68°40'
48°	5 <sup>15</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>32</sub>	6	9	3 <sup>27</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>4</sub>	4 <sup>13</sup> / <sub>16</sub>	68°13'
47°	5 <sup>27</sup> / <sub>32</sub>	3 <sup>17</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>32</sub>	9 <sup>5</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>8</sub>	8 <sup>9</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>8</sub>	4 <sup>29</sup> / <sub>32</sub>	67°46'
46°	5 <sup>3</sup> / <sub>4</sub>	3 <sup>23</sup> / <sub>32</sub>	8 <sup>29</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	9 <sup>2</sup> / <sub>32</sub>	3 <sup>29</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>2</sub>	3	5	67°20'
45°	5 <sup>2</sup> / <sub>32</sub>	3 <sup>29</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	10	3 <sup>15</sup> / <sub>16</sub>	8 <sup>23</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>8</sub>	66°54'
44°	5 <sup>9</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	6 <sup>29</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>32</sub>	66°28'
43°	5 <sup>15</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	9 <sup>13</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>16</sub>	3 <sup>8</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>16</sub>	66°03'
42°	5 <sup>3</sup> / <sub>8</sub>	4 <sup>19</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	5 <sup>7</sup> / <sub>16</sub>	65°38'
41°	5 <sup>1</sup> / <sub>4</sub>	4 <sup>13</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>16</sub>	7 <sup>2</sup> / <sub>32</sub>	11 <sup>15</sup> / <sub>32</sub>	4	9 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>32</sub>	65°14'
40°	5 <sup>5</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	10 <sup>25</sup> / <sub>32</sub>	7 <sup>15</sup> / <sub>16</sub>	11 <sup>29</sup> / <sub>32</sub>	4	9 <sup>15</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>	5 <sup>5</sup> / <sub>8</sub>	64°50'
39°	5 <sup>1</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>32</sub>	*11 <sup>2</sup> / <sub>32</sub>	4	10 <sup>9</sup> / <sub>32</sub>	3 <sup>29</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	64°27'
38°	4 <sup>15</sup> / <sub>16</sub>	5 <sup>19</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>2</sub>	8 <sup>17</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>4</sub>	4	10 <sup>13</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	5 <sup>27</sup> / <sub>32</sub>	64°04'
37°	4 <sup>13</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>8</sub>	11 <sup>7</sup> / <sub>8</sub>	8 <sup>27</sup> / <sub>32</sub>	*10 <sup>7</sup> / <sub>8</sub>	4	10 <sup>2</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>16</sub>	63°41'
36°	4 <sup>23</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>4</sub>	9 <sup>6</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>32</sub>	10 <sup>29</sup> / <sub>32</sub>	4 <sup>6</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	63°19'
35°	4 <sup>19</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>2</sub>	*10 <sup>3</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	11 <sup>3</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>8</sub>	62°58'
34°	4 <sup>15</sup> / <sub>32</sub>	6 <sup>13</sup> / <sub>16</sub>	*10 <sup>3</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>8</sub>	*9 <sup>3</sup> / <sub>4</sub>	3 <sup>29</sup> / <sub>32</sub>	11 <sup>7</sup> / <sub>16</sub>	4 <sup>19</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>32</sub>	62°38'
33°	4 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	*10 <sup>9</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>4</sub>	*9 <sup>3</sup> / <sub>8</sub>	3 <sup>7</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>16</sub>	62°18'
32°	4 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>2</sub>	*10 <sup>7</sup> / <sub>32</sub>	10 <sup>2</sup> / <sub>32</sub>	*9	3 <sup>27</sup> / <sub>32</sub>	11 <sup>5</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	61°58'
31°	4 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	*9 <sup>7</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>16</sub>	*8 <sup>2</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	*11 <sup>25</sup> / <sub>32</sub>	5	6 <sup>15</sup> / <sub>32</sub>	61°40'
30°	4	8 <sup>5</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>2</sub>	11 <sup>17</sup> / <sub>32</sub>	*8 <sup>5</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>	*11 <sup>9</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>32</sub>	6 <sup>9</sup> / <sub>16</sub>	61°22'
29°	3 <sup>7</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>4</sub>	*9 <sup>5</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>32</sub>	*8	3 <sup>1</sup> / <sub>16</sub>	*11 <sup>5</sup> / <sub>16</sub>	5 <sup>9</sup> / <sub>32</sub>	6 <sup>2</sup> / <sub>32</sub>	61°02'
28°	3 <sup>3</sup> / <sub>4</sub>	9 <sup>7</sup> / <sub>32</sub>	*8 <sup>13</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	*11 <sup>3</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	6 <sup>23</sup> / <sub>32</sub>	60°43'
27°	3 <sup>5</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>16</sub>	*8 <sup>15</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>32</sub>	*7 <sup>3</sup> / <sub>8</sub>	3 <sup>9</sup> / <sub>16</sub>	*10 <sup>7</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>16</sub>	6 <sup>13</sup> / <sub>16</sub>	60°24'
26°	3 <sup>1</sup> / <sub>2</sub>	10 <sup>7</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>8</sub>	*10 <sup>9</sup> / <sub>16</sub>	*7 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	*10 <sup>2</sup> / <sub>32</sub>	5 <sup>23</sup> / <sub>32</sub>	6 <sup>29</sup> / <sub>32</sub>	60°06'
25°	3 <sup>3</sup> / <sub>8</sub>	10 <sup>25</sup> / <sub>32</sub>	*7 <sup>25</sup> / <sub>32</sub>	*10 <sup>3</sup> / <sub>32</sub>	*6 <sup>23</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>32</sub>	*10 <sup>7</sup> / <sub>16</sub>	5 <sup>27</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	59°49'
24°	3 <sup>1</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>8</sub>	*7 <sup>7</sup> / <sub>16</sub>	*9 <sup>5</sup> / <sub>8</sub>	*6 <sup>7</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>4</sub>	6	7 <sup>1</sup> / <sub>16</sub>	59°32'
23°	3 <sup>1</sup> / <sub>8</sub>	*12	*7 <sup>1</sup> / <sub>8</sub>	*9 <sup>3</sup> / <sub>16</sub>	*6 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	*10 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	59°16'
22°	3	*11 <sup>5</sup> / <sub>16</sub>	*6 <sup>13</sup> / <sub>16</sub>	*8 <sup>3</sup> / <sub>4</sub>	*5 <sup>13</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	*9 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>16</sub>	59°02'
21°	2 <sup>7</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>16</sub>	*6 <sup>1</sup> / <sub>2</sub>	*8 <sup>5</sup> / <sub>16</sub>	*5 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	*9 <sup>23</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	58°48'
20°	2 <sup>3</sup> / <sub>4</sub>	*10 <sup>1</sup> / <sub>16</sub>	*6 <sup>5</sup> / <sub>32</sub>	*7 <sup>7</sup> / <sub>8</sub>	*5 <sup>1</sup> / <sub>4</sub>	2 <sup>15</sup> / <sub>16</sub>	*9 <sup>9</sup> / <sub>16</sub>	6 <sup>17</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	58°34'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 9"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	8 <sup>1</sup> / <sub>3</sub> 2	2 <sup>3</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	2 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	1 <sup>1</sup> / <sub>6</sub>	2 <sup>1</sup> / <sub>3</sub> 2	78°08'
69°	8 <sup>1</sup> / <sub>3</sub> 2	2 <sup>5</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	2 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>3</sub> 2	2 <sup>5</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	77°34'
68°	8 <sup>1</sup> / <sub>3</sub> 2	7 <sup>8</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	3 <sup>7</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	77°00'
67°	8 <sup>9</sup> / <sub>3</sub> 2	1 <sup>5</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	76°26'
66°	8 <sup>7</sup> / <sub>3</sub> 2	1 <sup>3</sup> / <sub>2</sub> 2	4 <sup>5</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>8</sub>	1	3 <sup>1</sup> / <sub>2</sub> 2	75°52'
65°	8 <sup>5</sup> / <sub>3</sub> 2	1 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>3</sub> 2	75°19'
64°	8 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub> 2	3 <sup>9</sup> / <sub>3</sub> 2	74°45'
63°	8	1 <sup>1</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>3</sub> 2	3 <sup>5</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>3</sub> 2	74°12'
62°	7 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>8</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	73°38'
61°	7 <sup>7</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>3</sub> 2	4	5 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>3</sub> 2	73°05'
60°	7 <sup>2</sup> / <sub>3</sub> 2	1 <sup>2</sup> / <sub>3</sub> 2	5 <sup>9</sup> / <sub>3</sub> 2	4 <sup>5</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 2	3 <sup>7</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>3</sub> 2	72°33'
59°	7 <sup>2</sup> / <sub>3</sub> 2	1 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 2	4 <sup>5</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>3</sub> 2	5 <sup>7</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>3</sub> 2	72°00'
58°	7 <sup>5</sup> / <sub>8</sub>	1 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	6	3 <sup>1</sup> / <sub>3</sub> 2	5 <sup>5</sup> / <sub>8</sub>	1 <sup>2</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>3</sub> 2	71°28'
57°	7 <sup>1</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>3</sub> 2	5 <sup>7</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>3</sub> 2	1 <sup>1</sup> / <sub>3</sub> 2	4 <sup>5</sup> / <sub>3</sub> 2	70°56'
56°	7 <sup>7</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>3</sub> 2	4 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>4</sub>	6	1 <sup>5</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>3</sub> 2	70°24'
55°	7 <sup>3</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>16</sub>	6 <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>3</sub> 2	6 <sup>2</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>3</sub> 2	6 <sup>3</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>3</sub> 2	69°52'
54°	7 <sup>9</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>3</sub> 2	6 <sup>1</sup> / <sub>3</sub> 2	5 <sup>7</sup> / <sub>3</sub> 2	7	3 <sup>2</sup> / <sub>3</sub> 2	6 <sup>3</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>3</sub> 2	69°20'
53°	7 <sup>3</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>8</sub>	6 <sup>2</sup> / <sub>3</sub> 2	5 <sup>7</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>3</sub> 2	6 <sup>1</sup> / <sub>3</sub> 2	2 <sup>9</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	68°48'
52°	7 <sup>3</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	6 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>3</sub> 2	6 <sup>2</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	68°19'
51°	6 <sup>3</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>3</sub> 2	7 <sup>2</sup> / <sub>3</sub> 2	4 <sup>3</sup> / <sub>3</sub> 2	7	2 <sup>1</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	67°49'
50°	6 <sup>2</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>3</sub> 2	7 <sup>7</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>3</sub> 2	7 <sup>3</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 2	67°18'
49°	6 <sup>2</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>3</sub> 2	4 <sup>7</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	5 <sup>5</sup> / <sub>3</sub> 2	66°49'
48°	6 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>3</sub> 2	8 <sup>5</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>4</sub>	66°20'
47°	6 <sup>9</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>3</sub> 2	8 <sup>3</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	5 <sup>3</sup> / <sub>8</sub>	65°51'
46°	6 <sup>1</sup> / <sub>3</sub> 2	3 <sup>7</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>3</sub> 2	8	3 <sup>5</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>2</sub>	65°22'
45°	6 <sup>3</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>3</sub> 2	4 <sup>3</sup> / <sub>8</sub>	8 <sup>7</sup> / <sub>3</sub> 2	3 <sup>5</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	64°54'
44°	6 <sup>1</sup> / <sub>4</sub>	4 <sup>9</sup> / <sub>3</sub> 2	8 <sup>3</sup> / <sub>3</sub> 2	7 <sup>7</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>3</sub> 2	8 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>4</sub>	64°26'
43°	6 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>4</sub>	7 <sup>2</sup> / <sub>3</sub> 2	10 <sup>3</sup> / <sub>3</sub> 2	4 <sup>7</sup> / <sub>16</sub>	8 <sup>2</sup> / <sub>3</sub> 2	3 <sup>9</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>8</sub>	63°59'
42°	6	4 <sup>3</sup> / <sub>4</sub>	9 <sup>9</sup> / <sub>16</sub>	8	10 <sup>2</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>3</sub> 2	8 <sup>7</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>3</sub> 2	5 <sup>3</sup> / <sub>3</sub> 2	63°32'
41°	5 <sup>2</sup> / <sub>3</sub> 2	5	9 <sup>2</sup> / <sub>3</sub> 2	8 <sup>9</sup> / <sub>3</sub> 2	11 <sup>1</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>3</sub> 2	9 <sup>3</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>3</sub> 2	6 <sup>3</sup> / <sub>3</sub> 2	63°05'
40°	5 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>4</sub>	10 <sup>5</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>3</sub> 2	11 <sup>7</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	9 <sup>5</sup> / <sub>16</sub>	4	6 <sup>7</sup> / <sub>3</sub> 2	62°38'
39°	5 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 2	10 <sup>1</sup> / <sub>2</sub>	8 <sup>2</sup> / <sub>3</sub> 2	11 <sup>7</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>3</sub> 2	4 <sup>5</sup> / <sub>3</sub> 2	6 <sup>5</sup> / <sub>16</sub>	62°12'
38°	5 <sup>1</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	9 <sup>7</sup> / <sub>3</sub> 2	*11 <sup>2</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>16</sub>	61°46'
37°	5 <sup>1</sup> / <sub>3</sub> 2	6 <sup>3</sup> / <sub>3</sub> 2	11 <sup>3</sup> / <sub>16</sub>	9 <sup>9</sup> / <sub>16</sub>	*11 <sup>9</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>3</sub> 2	6 <sup>9</sup> / <sub>16</sub>	61°22'
36°	5 <sup>9</sup> / <sub>3</sub> 2	6 <sup>1</sup> / <sub>3</sub> 2	11 <sup>9</sup> / <sub>16</sub>	9 <sup>2</sup> / <sub>3</sub> 2	*10 <sup>2</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	6 <sup>2</sup> / <sub>3</sub> 2	60°58'
35°	5 <sup>5</sup> / <sub>3</sub> 2	6 <sup>3</sup> / <sub>4</sub>	11 <sup>5</sup> / <sub>16</sub>	10 <sup>9</sup> / <sub>3</sub> 2	*10 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>3</sub> 2	10 <sup>1</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	6 <sup>2</sup> / <sub>3</sub> 2	60°34'
34°	5 <sup>1</sup> / <sub>3</sub> 2	7 <sup>3</sup> / <sub>3</sub> 2	*11 <sup>1</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>8</sub>	60°12'
33°	4 <sup>2</sup> / <sub>3</sub> 2	7 <sup>7</sup> / <sub>16</sub>	*11 <sup>5</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>16</sub>	*9 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>3</sub> 2	10 <sup>2</sup> / <sub>3</sub> 2	5 <sup>8</sup> / <sub>3</sub> 2	7	59°49'
32°	4 <sup>2</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>3</sub> 2	*10 <sup>1</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>2</sub>	*9 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>3</sub> 2	59°26'
31°	4 <sup>5</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>3</sub> 2	11 <sup>3</sup> / <sub>3</sub> 2	*9 <sup>1</sup> / <sub>3</sub> 2	4 <sup>5</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>3</sub> 2	7 <sup>3</sup> / <sub>16</sub>	59°04'
30°	4 <sup>1</sup> / <sub>2</sub>	8 <sup>5</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>3</sub>	*11 <sup>9</sup> / <sub>16</sub>	*8 <sup>2</sup> / <sub>3</sub> 2	4 <sup>9</sup> / <sub>3</sub> 2	11 <sup>1</sup> / <sub>3</sub> 2	5 <sup>9</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>16</sub>	58°46'
29°	4 <sup>3</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>3</sub> 2	*9 <sup>3</sup> / <sub>4</sub>	*11 <sup>3</sup> / <sub>3</sub> 2	*8 <sup>5</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>3</sub> 2	11 <sup>3</sup> / <sub>4</sub>	5 <sup>2</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>3</sub> 2	58°25'
28°	4 <sup>7</sup> / <sub>3</sub> 2	9 <sup>1</sup> / <sub>3</sub> 2	*9 <sup>3</sup> / <sub>8</sub>	*10 <sup>5</sup> / <sub>8</sub>	*8	4 <sup>5</sup> / <sub>3</sub> 2	11 <sup>3</sup> / <sub>3</sub> 2	5 <sup>2</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>2</sub>	58°00'
27°	4 <sup>3</sup> / <sub>3</sub> 2	10 <sup>3</sup> / <sub>3</sub> 2	*9 <sup>1</sup> / <sub>16</sub>	*10 <sup>3</sup> / <sub>16</sub>	*7 <sup>2</sup> / <sub>3</sub> 2	4 <sup>3</sup> / <sub>3</sub> 2	*11 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>3</sub> 2	57°40'
26°	3 <sup>1</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>8</sub>	*8 <sup>1</sup> / <sub>16</sub>	*9 <sup>3</sup> / <sub>4</sub>	*7 <sup>5</sup> / <sub>16</sub>	4	*11 <sup>9</sup> / <sub>3</sub> 2	6 <sup>7</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>16</sub>	57°21'
25°	3 <sup>1</sup> / <sub>16</sub>	11 <sup>3</sup> / <sub>16</sub>	*8 <sup>1</sup> / <sub>3</sub> 2	*9 <sup>5</sup> / <sub>16</sub>	*7	3 <sup>2</sup> / <sub>3</sub> 2	*11 <sup>1</sup> / <sub>3</sub> 2	6 <sup>3</sup> / <sub>8</sub>	7 <sup>2</sup> / <sub>3</sub> 2	57°02'
24°	3 <sup>2</sup> / <sub>3</sub> 2	11 <sup>3</sup> / <sub>16</sub>	*8	*8 <sup>7</sup> / <sub>8</sub>	*6 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>3</sub> 2	*11 <sup>3</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>3</sub> 2	7 <sup>7</sup> / <sub>8</sub>	56°44'
23°	3 <sup>1</sup> / <sub>2</sub>	*11 <sup>1</sup> / <sub>3</sub> 2	*7 <sup>5</sup> / <sub>8</sub>	*8 <sup>1</sup> / <sub>3</sub> 2	*6 <sup>3</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>3</sub> 2	*11	6 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	56°28'
22°	3 <sup>3</sup> / <sub>8</sub>	*10 <sup>2</sup> / <sub>3</sub> 2	*7 <sup>5</sup> / <sub>16</sub>	*8 <sup>3</sup> / <sub>3</sub> 2	*6 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	*10 <sup>2</sup> / <sub>3</sub> 2	6 <sup>2</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>3</sub> 2	56°12'
21°	3 <sup>7</sup> / <sub>3</sub> 2	*10 <sup>9</sup> / <sub>3</sub> 2	*6 <sup>3</sup> / <sub>3</sub> 2	*7 <sup>2</sup> / <sub>3</sub> 2	*5 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	*10 <sup>2</sup> / <sub>3</sub> 2	7	8 <sup>1</sup> / <sub>3</sub> 2	55°55'
20°	3 <sup>1</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>16</sub>	*6 <sup>5</sup> / <sub>8</sub>	*7 <sup>9</sup> / <sub>3</sub> 2	*5 <sup>1</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	*10 <sup>1</sup> / <sub>3</sub> 2	7 <sup>3</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>16</sub>	55°40'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 10"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	9 <sup>1</sup> / <sub>3</sub> 2	2 <sup>3</sup> / <sub>3</sub> 2	3 <sup>9</sup> / <sub>3</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>3</sub> 2	3 <sup>9</sup> / <sub>3</sub> 2	2 <sup>3</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>1</sub> 6	77°20'
69°	9 <sup>1</sup> / <sub>3</sub> 2	1 <sup>3</sup> / <sub>1</sub> 6	3 <sup>7</sup> / <sub>1</sub> 6	2 <sup>1</sup> / <sub>5</sub> 1 6	3 <sup>1</sup> / <sub>7</sub> 2	2 <sup>2</sup> / <sub>3</sub> 2	3 <sup>7</sup> / <sub>1</sub> 6	2 <sup>5</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>3</sub> 1 6	76°44'
68°	9 <sup>9</sup> / <sub>3</sub> 2	7 <sup>8</sup>	3 <sup>5</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>3</sub> 1 6	3 <sup>5</sup> / <sub>8</sub>	7 <sup>8</sup>	2 <sup>3</sup> / <sub>1</sub> 2	76°08'
67°	9 <sup>3</sup> / <sub>1</sub> 6	3 <sup>1</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>4</sub>	3 <sup>2</sup> / <sub>9</sub> 2	2 <sup>1</sup> / <sub>5</sub> 1 6	3 <sup>2</sup> / <sub>3</sub> 2	1 <sup>5</sup> / <sub>1</sub> 6	3 <sup>3</sup> / <sub>3</sub> 2	75°30'
66°	9 <sup>7</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>1</sub> 6	3 <sup>1</sup> / <sub>5</sub> 1 6	3 <sup>1</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>1</sub> 6	3 <sup>1</sup> / <sub>5</sub> 1 6	1 <sup>1</sup> / <sub>3</sub> 2	3 <sup>7</sup> / <sub>3</sub> 2	74°53'
65°	9 <sup>1</sup> / <sub>1</sub> 6	1 <sup>5</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>9</sub> 2	4 <sup>5</sup> / <sub>1</sub> 6	3 <sup>3</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>8</sub>	74°17'
64°	8 <sup>3</sup> / <sub>3</sub> 2	1 <sup>1</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>1</sub> 6	3 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>2</sub>	3 <sup>5</sup> / <sub>1</sub> 6	4 <sup>9</sup> / <sub>3</sub> 2	1 <sup>3</sup> / <sub>1</sub> 6	3 <sup>1</sup> / <sub>2</sub>	73°41'
63°	8 <sup>2</sup> / <sub>9</sub> 2	1 <sup>3</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	3 <sup>2</sup> / <sub>9</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>5</sub> 2	1 <sup>9</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>1</sub> 2	73°06'
62°	8 <sup>1</sup> / <sub>3</sub> 1 6	1 <sup>1</sup> / <sub>5</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	4 <sup>3</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>9</sub> 2	3 <sup>1</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>5</sub> 2	72°30'
61°	8 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>3</sub> 1 6	1 <sup>1</sup> / <sub>5</sub> 2	3 <sup>2</sup> / <sub>9</sub> 2	71°56'
60°	8 <sup>2</sup> / <sub>3</sub> 2	1 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 2	4 <sup>7</sup> / <sub>1</sub> 6	5 <sup>5</sup> / <sub>1</sub> 6	3 <sup>2</sup> / <sub>3</sub> 2	5	1 <sup>9</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>1</sub> 6	71°20'
59°	8 <sup>9</sup> / <sub>1</sub> 6	1 <sup>1</sup> / <sub>3</sub> 1 6	5 <sup>7</sup> / <sub>3</sub> 2	4 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>7</sub> 2	3 <sup>1</sup> / <sub>3</sub> 1 6	5 <sup>5</sup> / <sub>3</sub> 2	1 <sup>1</sup> / <sub>1</sub> 1 6	4 <sup>3</sup> / <sub>1</sub> 6	70°45'
58°	8 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>3</sub> 2	5 <sup>7</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>3</sub> 1 6	5 <sup>3</sup> / <sub>4</sub>	3 <sup>2</sup> / <sub>9</sub> 2	5 <sup>1</sup> / <sub>1</sub> 2	1 <sup>2</sup> / <sub>6</sub> 2	4 <sup>1</sup> / <sub>1</sub> 2	70°10'
57°	8 <sup>3</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>3</sub> 2	5 <sup>5</sup> / <sub>8</sub>	5	6	4	5 <sup>1</sup> / <sub>7</sub> 2	1 <sup>2</sup> / <sub>9</sub> 2	4 <sup>1</sup> / <sub>5</sub> 2	69°34'
56°	8 <sup>9</sup> / <sub>3</sub> 2	2 <sup>7</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 1 6	5 <sup>3</sup> / <sub>1</sub> 6	6 <sup>7</sup> / <sub>3</sub> 2	4 <sup>3</sup> / <sub>3</sub> 2	5 <sup>2</sup> / <sub>3</sub> 2	2	4 <sup>1</sup> / <sub>9</sub> 2	69°01'
55°	8 <sup>3</sup> / <sub>1</sub> 6	2 <sup>3</sup> / <sub>8</sub>	6	5 <sup>3</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>5</sub> 2	4 <sup>5</sup> / <sub>3</sub> 2	5 <sup>7</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	68°26'
54°	8 <sup>3</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>7</sub> 2	6 <sup>7</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>9</sub> 2	6 <sup>1</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>1</sub> 6	2 <sup>1</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>8</sub>	67°54'
53°	7 <sup>3</sup> / <sub>3</sub> 2	2 <sup>1</sup> / <sub>1</sub> 6	6 <sup>1</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 1 6	6 <sup>1</sup> / <sub>5</sub> 1 6	4 <sup>1</sup> / <sub>1</sub> 2	6 <sup>1</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>3</sub> 2	5	67°20'
52°	7 <sup>7</sup> / <sub>8</sub>	2 <sup>2</sup> / <sub>3</sub> 2	6 <sup>5</sup> / <sub>8</sub>	6	7 <sup>3</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>3</sub> 2	6 <sup>7</sup> / <sub>1</sub> 6	2 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>8</sub>	66°46'
51°	7 <sup>3</sup> / <sub>4</sub>	3	6 <sup>2</sup> / <sub>3</sub> 2	6 <sup>7</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>5</sub> 2	4 <sup>1</sup> / <sub>2</sub>	6 <sup>5</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>3</sub> 2	66°14'
50°	7 <sup>2</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>1</sub> 6	7 <sup>1</sup> / <sub>1</sub> 6	6 <sup>7</sup> / <sub>1</sub> 6	7 <sup>2</sup> / <sub>3</sub> 2	4 <sup>9</sup> / <sub>1</sub> 6	6 <sup>1</sup> / <sub>3</sub> 1 6	2 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>3</sub> 2	65°42'
49°	7 <sup>1</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>8</sub>	7 <sup>9</sup> / <sub>3</sub> 2	6 <sup>1</sup> / <sub>1</sub> 1 6	8	4 <sup>9</sup> / <sub>8</sub>	7	2 <sup>7</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>1</sub> 6	65°10'
48°	7 <sup>1</sup> / <sub>1</sub> 6	3 <sup>9</sup> / <sub>1</sub> 6	7 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>5</sub> 1 6	8 <sup>5</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>1</sub> 1 6	7 <sup>3</sup> / <sub>1</sub> 6	3 <sup>1</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>1</sub> 1 6	64°39'
47°	7 <sup>5</sup> / <sub>1</sub> 6	3 <sup>3</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>1</sub> 6	8 <sup>1</sup> / <sub>9</sub> 2	4 <sup>3</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 1 6	64°07'
46°	7 <sup>3</sup> / <sub>1</sub> 6	3 <sup>3</sup> / <sub>3</sub> 2	7 <sup>3</sup> / <sub>3</sub> 2	7 <sup>7</sup> / <sub>1</sub> 6	8 <sup>2</sup> / <sub>9</sub> 2	4 <sup>2</sup> / <sub>5</sub> 2	7 <sup>9</sup> / <sub>1</sub> 6	3 <sup>5</sup> / <sub>1</sub> 6	5 <sup>1</sup> / <sub>5</sub> 1 6	63°36'
45°	7 <sup>1</sup> / <sub>1</sub> 6	4 <sup>3</sup> / <sub>1</sub> 6	8 <sup>7</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>1</sub> 1 6	9 <sup>7</sup> / <sub>3</sub> 2	4 <sup>2</sup> / <sub>7</sub> 2	7 <sup>3</sup> / <sub>4</sub>	3 <sup>7</sup> / <sub>1</sub> 6	6 <sup>3</sup> / <sub>3</sub> 2	63°05'
44°	6 <sup>1</sup> / <sub>3</sub> 1 6	4 <sup>1</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>5</sub> 1 6	9 <sup>1</sup> / <sub>7</sub> 2	4 <sup>7</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>3</sub> 2	3 <sup>1</sup> / <sub>9</sub> 2	6 <sup>7</sup> / <sub>3</sub> 2	62°35'
43°	6 <sup>1</sup> / <sub>3</sub> 1 6	4 <sup>5</sup> / <sub>8</sub>	8 <sup>2</sup> / <sub>3</sub> 2	8 <sup>7</sup> / <sub>3</sub> 2	9 <sup>7</sup> / <sub>8</sub>	4 <sup>2</sup> / <sub>9</sub> 2	8 <sup>5</sup> / <sub>3</sub> 2	3 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>3</sub> 2	62°05'
42°	6 <sup>1</sup> / <sub>1</sub> 6	4 <sup>7</sup> / <sub>8</sub>	9	8 <sup>1</sup> / <sub>7</sub> 2	10 <sup>7</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>5</sub> 1 6	8 <sup>1</sup> / <sub>3</sub> 2	3 <sup>2</sup> / <sub>9</sub> 2	6 <sup>1</sup> / <sub>2</sub>	61°36'
41°	6 <sup>9</sup> / <sub>1</sub> 6	5 <sup>1</sup> / <sub>8</sub>	9 <sup>9</sup> / <sub>3</sub> 2	8 <sup>2</sup> / <sub>3</sub> 2	10 <sup>1</sup> / <sub>9</sub> 2	4 <sup>3</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>7</sub> 2	4 <sup>1</sup> / <sub>1</sub> 6	6 <sup>5</sup> / <sub>8</sub>	61°07'
40°	6 <sup>7</sup> / <sub>1</sub> 6	5 <sup>3</sup> / <sub>8</sub>	9 <sup>9</sup> / <sub>1</sub> 6	9 <sup>5</sup> / <sub>3</sub> 2	11	4 <sup>3</sup> / <sub>3</sub> 2	8 <sup>3</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>3</sub> 2	6 <sup>3</sup> / <sub>4</sub>	60°38'
39°	6 <sup>3</sup> / <sub>3</sub> 2	5 <sup>2</sup> / <sub>3</sub> 2	9 <sup>7</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>8</sub>	5	8 <sup>1</sup> / <sub>5</sub> 1 6	4 <sup>3</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>8</sub>	60°10'
38°	6 <sup>5</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>1</sub> 6	10 <sup>3</sup> / <sub>1</sub> 6	9 <sup>2</sup> / <sub>7</sub> 2	11 <sup>2</sup> / <sub>5</sub> 2	5	9 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>7</sub> 2	7	59°42'
37°	6 <sup>1</sup> / <sub>3</sub> 2	6 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>2</sub>	10 <sup>7</sup> / <sub>3</sub> 2	*11 <sup>2</sup> / <sub>5</sub> 2	5	9 <sup>5</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>1</sub> 1 6	7 <sup>1</sup> / <sub>8</sub>	59°15'
36°	5 <sup>7</sup> / <sub>8</sub>	6 <sup>9</sup> / <sub>1</sub> 6	10 <sup>2</sup> / <sub>3</sub> 2	10 <sup>9</sup> / <sub>1</sub> 6	*11 <sup>1</sup> / <sub>3</sub> 2	5	9 <sup>1</sup> / <sub>7</sub> 2	4 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	58°48'
35°	5 <sup>3</sup> / <sub>4</sub>	6 <sup>2</sup> / <sub>9</sub> 2	11 <sup>7</sup> / <sub>3</sub> 2	10 <sup>3</sup> / <sub>3</sub> 2	*10 <sup>1</sup> / <sub>5</sub> 1 6	4 <sup>3</sup> / <sub>3</sub> 2	9 <sup>2</sup> / <sub>3</sub> 2	5 <sup>1</sup> / <sub>3</sub> 2	7 <sup>3</sup> / <sub>8</sub>	58°22'
34°	5 <sup>1</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>4</sub>	11 <sup>9</sup> / <sub>1</sub> 6	11 <sup>3</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>7</sub> 2	4 <sup>3</sup> / <sub>3</sub> 2	9 <sup>2</sup> / <sub>3</sub> 2	5 <sup>7</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>2</sub>	57°57'
33°	5 <sup>7</sup> / <sub>1</sub> 6	7 <sup>5</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>5</sub> 1 6	11 <sup>2</sup> / <sub>7</sub> 2	*10 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>5</sub> 1 6	10 <sup>3</sup> / <sub>3</sub> 2	5 <sup>3</sup> / <sub>8</sub>	7 <sup>5</sup> / <sub>8</sub>	57°32'
32°	5 <sup>5</sup> / <sub>1</sub> 6	8	*11 <sup>2</sup> / <sub>3</sub> 2	*11 <sup>1</sup> / <sub>1</sub> 1 6	*9 <sup>2</sup> / <sub>5</sub> 2	4 <sup>2</sup> / <sub>9</sub> 2	10 <sup>5</sup> / <sub>1</sub> 6	5 <sup>9</sup> / <sub>1</sub> 6	7 <sup>3</sup> / <sub>4</sub>	57°08'
31°	5 <sup>3</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>3</sub> 2	*11 <sup>1</sup> / <sub>4</sub>	*11 <sup>1</sup> / <sub>4</sub>	*9 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>	7 <sup>7</sup> / <sub>8</sub>	56°44'
30°	5	8 <sup>2</sup> / <sub>3</sub> 2	*10 <sup>2</sup> / <sub>3</sub> 2	*10 <sup>1</sup> / <sub>3</sub> 1 6	*9 <sup>1</sup> / <sub>3</sub> 2	4 <sup>1</sup> / <sub>3</sub> 1 6	10 <sup>1</sup> / <sub>1</sub> 1 6	5 <sup>1</sup> / <sub>5</sub> 1 6	8	56°20'
29°	4 <sup>2</sup> / <sub>3</sub> 2	9 <sup>5</sup> / <sub>1</sub> 6	*10 <sup>7</sup> / <sub>1</sub> 6	*10 <sup>3</sup> / <sub>8</sub>	*8 <sup>1</sup> / <sub>1</sub> 1 6	4 <sup>3</sup> / <sub>4</sub>	10 <sup>7</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>3</sub> 2	8 <sup>1</sup> / <sub>8</sub>	55°57'
28°	4 <sup>1</sup> / <sub>1</sub> 6	9 <sup>2</sup> / <sub>3</sub> 2	*10 <sup>1</sup> / <sub>1</sub> 6	*9 <sup>3</sup> / <sub>3</sub> 2	*8 <sup>5</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>1</sub> 1 6	11 <sup>1</sup> / <sub>1</sub> 6	6 <sup>9</sup> / <sub>3</sub> 2	8 <sup>7</sup> / <sub>3</sub> 2	55°36'
27°	4 <sup>1</sup> / <sub>3</sub> 2	10 <sup>5</sup> / <sub>1</sub> 6	*9 <sup>1</sup> / <sub>1</sub> 1 6	*9 <sup>9</sup> / <sub>1</sub> 6	*7 <sup>3</sup> / <sub>3</sub> 2	4 <sup>5</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>5</sub> 2	8 <sup>1</sup> / <sub>3</sub> 2	55°14'
26°	4 <sup>3</sup> / <sub>8</sub>	10 <sup>7</sup> / <sub>8</sub>	*9 <sup>5</sup> / <sub>1</sub> 6	*9 <sup>5</sup> / <sub>3</sub> 2	*7 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>7</sub> 2	11 <sup>7</sup> / <sub>1</sub> 6	6 <sup>2</sup> / <sub>3</sub> 2	8 <sup>7</sup> / <sub>1</sub> 6	54°53'
25°	4 <sup>7</sup> / <sub>3</sub> 2	11 <sup>1</sup> / <sub>5</sub> 2	*8 <sup>1</sup> / <sub>5</sub> 1 6	*8 <sup>3</sup> / <sub>4</sub>	*7 <sup>9</sup> / <sub>3</sub> 2	4 <sup>7</sup> / <sub>1</sub> 6	11 <sup>5</sup> / <sub>8</sub>	6 <sup>2</sup> / <sub>7</sub> 2	8 <sup>9</sup> / <sub>1</sub> 6	54°32'
24°	4 <sup>1</sup> / <sub>1</sub> 6	*11 <sup>2</sup> / <sub>9</sub> 2	*8 <sup>9</sup> / <sub>1</sub> 6	*8 <sup>1</sup> / <sub>1</sub> 2	*6 <sup>1</sup> / <sub>5</sub> 1 6	4 <sup>1</sup> / <sub>3</sub> 2	11 <sup>1</sup> / <sub>3</sub> 1 6	7 <sup>1</sup> / <sub>3</sub> 2	8 <sup>2</sup> / <sub>3</sub> 2	54°13'
23°	3 <sup>2</sup> / <sub>9</sub> 2	*11 <sup>1</sup> / <sub>4</sub>	*8 <sup>3</sup> / <sub>1</sub> 6	*7 <sup>3</sup> / <sub>1</sub> 2	*6 <sup>5</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>3</sub> 2	*12	7 <sup>7</sup> / <sub>3</sub> 2	8 <sup>3</sup> / <sub>4</sub>	53°53'
22°	3 <sup>3</sup> / <sub>4</sub>	*10 <sup>5</sup> / <sub>8</sub>	*7 <sup>2</sup> / <sub>7</sub> 2	*7 <sup>9</sup> / <sub>1</sub> 6	*6 <sup>5</sup> / <sub>1</sub> 6	4 <sup>1</sup> / <sub>8</sub>	*11 <sup>1</sup> / <sub>3</sub> 1 6	7 <sup>1</sup> / <sub>3</sub> 2	8 <sup>2</sup> / <sub>7</sub> 2	53°36'
21°	3 <sup>1</sup> / <sub>9</sub> 2	*10 <sup>1</sup> / <sub>3</sub> 2	*7 <sup>1</sup> / <sub>5</sub> 2	*7 <sup>3</sup> / <sub>1</sub> 6	*6	4	*11 <sup>2</sup> / <sub>3</sub> 2	7 <sup>1</sup> / <sub>9</sub> 2	8 <sup>1</sup> / <sub>5</sub> 1 6	53°18'
20°	3 <sup>1</sup> / <sub>3</sub> 2	*9 <sup>7</sup> / <sub>1</sub> 6	*7 <sup>1</sup> / <sub>8</sub>	*6 <sup>1</sup> / <sub>3</sub> 1 6	*5 <sup>1</sup> / <sub>1</sub> 1 6	3 <sup>7</sup> / <sub>8</sub>	*11 <sup>1</sup> / <sub>2</sub>	7 <sup>2</sup> / <sub>5</sub> 2	9 <sup>1</sup> / <sub>3</sub> 2	53°01'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 11"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	10 <sup>1</sup> / <sub>32</sub>	3/4	3 <sup>1</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	76°38'
69°	10 <sup>9</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>8</sub>	3 <sup>9</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	3	75°59'
68°	10 <sup>3</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	3	3 <sup>15</sup> / <sub>32</sub>	7/8	3 <sup>1</sup> / <sub>8</sub>	75°20'
67°	10 <sup>1</sup> / <sub>8</sub>	1	3 <sup>5</sup> / <sub>8</sub>	3 <sup>7</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>32</sub>	74°42'
66°	10 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	3 <sup>25</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>4</sub>	3 <sup>25</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	74°03'
65°	9 <sup>3</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	3 <sup>25</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>8</sub>	3 <sup>9</sup> / <sub>16</sub>	73°24'
64°	9 <sup>7</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	4 <sup>9</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>23</sup> / <sub>32</sub>	72°46'
63°	9 <sup>13</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	4 <sup>17</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>	1 <sup>5</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>8</sub>	72°08'
62°	9 <sup>23</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>15</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>16</sub>	1 <sup>13</sup> / <sub>32</sub>	4	72°08'
61°	9 <sup>5</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>29</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>32</sub>	70°52'
60°	9 <sup>17</sup> / <sub>32</sub>	1 <sup>23</sup> / <sub>32</sub>	4 <sup>13</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	70°15'
59°	9 <sup>7</sup> / <sub>16</sub>	1 <sup>2</sup> / <sub>32</sub>	5	4 <sup>7</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	1 <sup>23</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>16</sub>	69°37'
58°	9 <sup>5</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	5 <sup>17</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	4 <sup>19</sup> / <sub>32</sub>	69°00'
57°	9 <sup>7</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>8</sub>	5 <sup>11</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	4 <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	1 <sup>15</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>4</sub>	68°24'
56°	9 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>	5 <sup>17</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>32</sub>	5 <sup>31</sup> / <sub>32</sub>	4 <sup>13</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>29</sup> / <sub>32</sub>	67°48'
55°	9	2 <sup>13</sup> / <sub>32</sub>	5 <sup>23</sup> / <sub>32</sub>	5 <sup>11</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>32</sub>	5 <sup>19</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	67°12'
54°	8 <sup>29</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	5 <sup>29</sup> / <sub>32</sub>	5 <sup>29</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>16</sub>	5 <sup>25</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>16</sub>	66°35'
53°	8 <sup>25</sup> / <sub>32</sub>	2 <sup>23</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>8</sub>	6 <sup>11</sup> / <sub>16</sub>	4 <sup>21</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>32</sub>	5 <sup>11</sup> / <sub>32</sub>	66°00'
52°	8 <sup>21</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>8</sub>	6 <sup>9</sup> / <sub>32</sub>	6 <sup>11</sup> / <sub>32</sub>	6 <sup>29</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	65°24'
51°	8 <sup>17</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	6 <sup>15</sup> / <sub>32</sub>	6 <sup>9</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>32</sub>	4 <sup>27</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	64°48'
50°	8 <sup>7</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	6 <sup>11</sup> / <sub>16</sub>	6 <sup>13</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>32</sub>	4 <sup>29</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>16</sub>	5 <sup>25</sup> / <sub>32</sub>	64°14'
49°	8 <sup>5</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	7 <sup>11</sup> / <sub>16</sub>	5	6 <sup>5</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>16</sub>	63°40'
48°	8 <sup>5</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	6 <sup>13</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	63°05'
47°	8 <sup>1</sup> / <sub>32</sub>	3 <sup>25</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>16</sub>	7 <sup>9</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>8</sub>	7	3 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>4</sub>	62°32'
46°	7 <sup>29</sup> / <sub>32</sub>	4	7 <sup>17</sup> / <sub>32</sub>	7 <sup>13</sup> / <sub>16</sub>	8 <sup>17</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>8</sub>	61°59'
45°	7 <sup>25</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>	7 <sup>25</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>32</sub>	8 <sup>27</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	7 <sup>11</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>16</sub>	6 <sup>17</sup> / <sub>32</sub>	61°27'
44°	7 <sup>5</sup> / <sub>8</sub>	4 <sup>15</sup> / <sub>32</sub>	8	8 <sup>3</sup> / <sub>8</sub>	9 <sup>5</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>2</sub>	3 <sup>23</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	60°53'
43°	7 <sup>1</sup> / <sub>2</sub>	4 <sup>11</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>32</sub>	8 <sup>11</sup> / <sub>16</sub>	9 <sup>15</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>8</sub>	6 <sup>13</sup> / <sub>16</sub>	60°21'
42°	7 <sup>1</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>16</sub>	8 <sup>15</sup> / <sub>32</sub>	9	9 <sup>13</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	59°52'
41°	7 <sup>7</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>4</sub>	9 <sup>5</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	59°20'
40°	7 <sup>1</sup> / <sub>16</sub>	5 <sup>15</sup> / <sub>32</sub>	9	9 <sup>2</sup> / <sub>32</sub>	10 <sup>17</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	58°50'
39°	6 <sup>29</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>32</sub>	10 <sup>29</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>8</sub>	4 <sup>17</sup> / <sub>32</sub>	7 <sup>13</sup> / <sub>32</sub>	58°20'
38°	6 <sup>25</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	9 <sup>9</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>8</sub>	11 <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	8 <sup>9</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	7 <sup>9</sup> / <sub>16</sub>	57°50'
37°	6 <sup>5</sup> / <sub>8</sub>	6 <sup>11</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>8</sub>	10 <sup>3</sup> / <sub>4</sub>	11 <sup>23</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	8 <sup>23</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	57°20'
36°	6 <sup>15</sup> / <sub>32</sub>	6 <sup>21</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>32</sub>	*11 <sup>13</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	8 <sup>29</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	7 <sup>27</sup> / <sub>32</sub>	56°51'
35°	6 <sup>5</sup> / <sub>16</sub>	7	10 <sup>17</sup> / <sub>32</sub>	11 <sup>19</sup> / <sub>32</sub>	*11 <sup>13</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>32</sub>	56°22'
34°	6 <sup>5</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>8</sub>	12	*10 <sup>3</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>8</sub>	55°56'
33°	6	7 <sup>23</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>4</sub>	*11 <sup>17</sup> / <sub>32</sub>	*10 <sup>9</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>4</sub>	55°28'
32°	5 <sup>27</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>8</sub>	11 <sup>5</sup> / <sub>8</sub>	*11 <sup>3</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	9 <sup>19</sup> / <sub>32</sub>	5 <sup>13</sup> / <sub>16</sub>	8 <sup>13</sup> / <sub>32</sub>	55°02'
31°	5 <sup>21</sup> / <sub>32</sub>	8 <sup>17</sup> / <sub>32</sub>	12	*10 <sup>1</sup> / <sub>16</sub>	*9 <sup>25</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>8</sub>	9 <sup>25</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	8 <sup>17</sup> / <sub>32</sub>	54°36'
30°	5 <sup>1</sup> / <sub>2</sub>	8 <sup>31</sup> / <sub>32</sub>	*11 <sup>19</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>4</sub>	*9 <sup>13</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	9 <sup>15</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>32</sub>	8 <sup>21</sup> / <sub>32</sub>	54°11'
29°	5 <sup>11</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>16</sub>	*11 <sup>3</sup> / <sub>16</sub>	*9 <sup>27</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>16</sub>	8 <sup>13</sup> / <sub>16</sub>	53°46'
28°	5 <sup>5</sup> / <sub>32</sub>	9 <sup>29</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>16</sub>	*9 <sup>7</sup> / <sub>16</sub>	*8 <sup>21</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>32</sub>	10 <sup>9</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	8 <sup>15</sup> / <sub>16</sub>	53°22'
27°	5	10 <sup>7</sup> / <sub>16</sub>	*10 <sup>13</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>32</sub>	*8 <sup>9</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>16</sub>	6 <sup>27</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	52°58'
26°	4 <sup>13</sup> / <sub>16</sub>	11	*10	*8 <sup>2</sup> / <sub>32</sub>	*7 <sup>15</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>16</sub>	52°35'
25°	4 <sup>21</sup> / <sub>32</sub>	11 <sup>5</sup> / <sub>8</sub>	*9 <sup>19</sup> / <sub>32</sub>	*8 <sup>9</sup> / <sub>32</sub>	*7 <sup>19</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	10 <sup>25</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>4</sub>	9 <sup>5</sup> / <sub>16</sub>	52°14'
24°	4 <sup>15</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>4</sub>	*9 <sup>7</sup> / <sub>32</sub>	*7 <sup>23</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>8</sub>	10 <sup>15</sup> / <sub>16</sub>	7 <sup>15</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>16</sub>	51°53'
23°	4 <sup>9</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>32</sub>	*8 <sup>13</sup> / <sub>16</sub>	*7 <sup>17</sup> / <sub>32</sub>	*6 <sup>29</sup> / <sub>32</sub>	4 <sup>25</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>32</sub>	7 <sup>21</sup> / <sub>32</sub>	9 <sup>17</sup> / <sub>32</sub>	51°32'
22°	4 <sup>1</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>2</sub>	*8 <sup>7</sup> / <sub>16</sub>	*7 <sup>7</sup> / <sub>16</sub>	*6 <sup>9</sup> / <sub>16</sub>	4 <sup>21</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>4</sub>	7 <sup>7</sup> / <sub>8</sub>	9 <sup>21</sup> / <sub>32</sub>	51°12'
21°	3 <sup>15</sup> / <sub>16</sub>	*9 <sup>29</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>16</sub>	*6 <sup>13</sup> / <sub>16</sub>	*6 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>4</sub>	50°53'
20°	3 <sup>3</sup> / <sub>4</sub>	*9 <sup>1</sup> / <sub>32</sub>	*7 <sup>2</sup> / <sub>32</sub>	*6 <sup>15</sup> / <sub>32</sub>	*5 <sup>15</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>8</sub>	11 <sup>17</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>8</sub>	50°34'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

12" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	11 <sup>9</sup> / <sub>32</sub>	3/4	3	3 <sup>3</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	3	2 <sup>3</sup> / <sub>32</sub>	3	75°59'
69°	11 <sup>3</sup> / <sub>16</sub>	13 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>8</sub>	13 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	75°19'
68°	11 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>32</sub>	7/8	3 <sup>9</sup> / <sub>32</sub>	74°39'
67°	11 <sup>1</sup> / <sub>32</sub>	1	3 <sup>7</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	73°58'
66°	10 <sup>3</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	73°17'
65°	10 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>4</sub>	72°37'
64°	10 <sup>2</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	71°56'
63°	10 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	71°16'
62°	10 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>	70°36'
61°	10 <sup>1</sup> / <sub>2</sub>	1 <sup>5</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	60°56'
60°	10 <sup>1</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>32</sub>	69°17'
59°	10 <sup>9</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	1 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	68°37'
58°	10 <sup>3</sup> / <sub>16</sub>	2	4 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	67°58'
57°	10 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	5	1 <sup>5</sup> / <sub>16</sub>	5	67°20'
56°	9 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>4</sub>	5 <sup>9</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>32</sub>	66°42'
55°	9 <sup>2</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>16</sub>	66°04'
54°	9 <sup>2</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	65°26'
53°	9 <sup>1</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	5	5 <sup>5</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	64°49'
52°	9 <sup>1</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	64°12'
51°	9 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	6 <sup>5</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	63°34'
50°	9 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>8</sub>	62°58'
49°	9 <sup>1</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>32</sub>	3	6 <sup>3</sup> / <sub>32</sub>	62°22'
48°	8 <sup>2</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>8</sub>	6 <sup>2</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>8</sub>	7 <sup>5</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	61°46'
47°	8 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	61°11'
46°	8 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>4</sub>	60°36'
45°	8 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>2</sub>	5 <sup>2</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>16</sub>	60°00'
44°	8 <sup>1</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>16</sub>	7 <sup>9</sup> / <sub>16</sub>	8 <sup>2</sup> / <sub>32</sub>	8 <sup>2</sup> / <sub>32</sub>	5 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	59°25'
43°	8 <sup>3</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	7 <sup>2</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>32</sub>	5 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>4</sub>	58°51'
42°	8 <sup>1</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	8	9 <sup>7</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>32</sub>	58°17'
41°	7 <sup>7</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>4</sub>	9 <sup>3</sup> / <sub>4</sub>	9 <sup>3</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>8</sub>	7 <sup>9</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	7 <sup>9</sup> / <sub>16</sub>	57°44'
40°	7 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>8</sub>	5 <sup>2</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	57°11'
39°	7 <sup>9</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>8</sub>	4 <sup>2</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>8</sub>	56°40'
38°	7 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>16</sub>	9	10 <sup>2</sup> / <sub>32</sub>	10 <sup>2</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>32</sub>	56°08'
37°	7 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>8</sub>	9 <sup>9</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>16</sub>	55°38'
36°	7 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	9 <sup>9</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>16</sub>	6	8 <sup>1</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>32</sub>	55°07'
35°	6 <sup>7</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>8</sub>	*11 <sup>7</sup> / <sub>8</sub>	*11 <sup>7</sup> / <sub>8</sub>	6	8 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>32</sub>	54°37'
34°	6 <sup>2</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>8</sub>	10 <sup>5</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>16</sub>	6	8 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>16</sub>	54°08'
33°	6 <sup>1</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>32</sub>	*11	*11	5 <sup>1</sup> / <sub>32</sub>	8 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	8 <sup>2</sup> / <sub>32</sub>	53°39'
32°	6 <sup>8</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>8</sub>	10 <sup>7</sup> / <sub>8</sub>	*10 <sup>9</sup> / <sub>16</sub>	*10 <sup>9</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>32</sub>	9	6 <sup>1</sup> / <sub>32</sub>	9	53°10'
31°	6 <sup>3</sup> / <sub>16</sub>	8 <sup>9</sup> / <sub>16</sub>	11 <sup>7</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>4</sub>	9 <sup>5</sup> / <sub>32</sub>	52°42'
30°	6	9	11 <sup>5</sup> / <sub>8</sub>	*9 <sup>2</sup> / <sub>32</sub>	*9 <sup>2</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>8</sub>	9 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	9 <sup>5</sup> / <sub>16</sub>	52°14'
29°	5 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>32</sub>	*9 <sup>3</sup> / <sub>8</sub>	*9 <sup>3</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>32</sub>	51°48'
28°	5 <sup>5</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>32</sub>	*11 <sup>9</sup> / <sub>16</sub>	*9	*9	5 <sup>3</sup> / <sub>4</sub>	9 <sup>5</sup> / <sub>8</sub>	6 <sup>2</sup> / <sub>32</sub>	9 <sup>5</sup> / <sub>8</sub>	51°22'
27°	5 <sup>7</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>8</sub>	*8 <sup>5</sup> / <sub>8</sub>	*8 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>16</sub>	9 <sup>3</sup> / <sub>4</sub>	7 <sup>7</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>4</sub>	50°58'
26°	5 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>16</sub>	*10 <sup>2</sup> / <sub>32</sub>	*8 <sup>9</sup> / <sub>32</sub>	*8 <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>8</sub>	7 <sup>9</sup> / <sub>8</sub>	9 <sup>7</sup> / <sub>8</sub>	50°32'
25°	5 <sup>1</sup> / <sub>16</sub>	11 <sup>2</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>16</sub>	*7 <sup>2</sup> / <sub>32</sub>	*7 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	50°09'
24°	4 <sup>7</sup> / <sub>8</sub>	*11 <sup>2</sup> / <sub>32</sub>	*9 <sup>2</sup> / <sub>32</sub>	*7 <sup>9</sup> / <sub>16</sub>	*7 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>32</sub>	49°47'
23°	4 <sup>1</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>2</sub>	*7 <sup>3</sup> / <sub>16</sub>	*7 <sup>3</sup> / <sub>16</sub>	5 <sup>9</sup> / <sub>32</sub>	10 <sup>9</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>16</sub>	10 <sup>9</sup> / <sub>32</sub>	49°23'
22°	4 <sup>1</sup> / <sub>2</sub>	*10 <sup>1</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>16</sub>	*6 <sup>7</sup> / <sub>8</sub>	*6 <sup>7</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>32</sub>	49°02'
21°	4 <sup>5</sup> / <sub>16</sub>	*9 <sup>7</sup> / <sub>8</sub>	*8 <sup>2</sup> / <sub>32</sub>	*6 <sup>1</sup> / <sub>2</sub>	*6 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	48°41'
20°	4 <sup>3</sup> / <sub>32</sub>	*9 <sup>9</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>4</sub>	*6 <sup>3</sup> / <sub>16</sub>	*6 <sup>3</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	10 <sup>2</sup> / <sub>32</sub>	8 <sup>2</sup> / <sub>32</sub>	10 <sup>2</sup> / <sub>32</sub>	48°21'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

11" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*11 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	3/4	2 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>7</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>8</sub>	75°23'
69°	*11 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>16</sub>	3	3 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>2</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>16</sub>	3	1 <sup>3</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	74°42'
68°	*11 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>9</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	7/8	3 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	73°58'
67°	*11 <sup>1</sup> / <sub>16</sub> <sup>1</sup> / <sub>6</sub>	1	3 <sup>9</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>6</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>8</sub>	73°16'
66°	11 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	1 <sup>1</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>5</sup> / <sub>8</sub>	3 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	72°33'
65°	11 <sup>7</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>4</sub>	3 <sup>9</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	71°51'
64°	11 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	1 <sup>9</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	1 <sup>7</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	71°08'
63°	11 <sup>1</sup> / <sub>16</sub> <sup>1</sup> / <sub>6</sub>	1 <sup>3</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>8</sub>	1 <sup>5</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>4</sub>	70°27'
62°	11 <sup>9</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>32</sub>	4	1 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>7</sup> / <sub>16</sub>	69°44'
61°	11 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>3</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	69°03'
60°	11 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	1 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	4 <sup>7</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	68°22'
59°	11 <sup>1</sup> / <sub>4</sub>	1 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	67°41'
58°	11 <sup>1</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	5 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	4 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	1 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>32</sub>	67°00'
57°	11	2 <sup>1</sup> / <sub>8</sub>	4 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>	5 <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	4 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>4</sub>	66°20'
56°	10 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	2 <sup>1</sup> / <sub>4</sub>	5	5 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	4 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>2</sub>	5 <sup>7</sup> / <sub>16</sub>	65°40'
55°	10 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	5 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	64°59'
54°	10 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>9</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>16</sub>	5 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	64°19'
53°	10 <sup>7</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	6 <sup>1</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	63°40'
52°	10 <sup>5</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>8</sub>	5 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>7</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>8</sub>	63°00'
51°	10 <sup>5</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	7 <sup>5</sup> / <sub>32</sub>	6 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>4</sub>	6 <sup>9</sup> / <sub>32</sub>	62°21'
50°	10 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>7</sup> / <sub>32</sub>	6	7 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	5 <sup>5</sup> / <sub>8</sub>	5 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	61°42'
49°	9 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>5</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	7 <sup>1</sup> / <sub>16</sub>	5 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	61°04'
48°	9 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	6 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	60°27'
47°	9 <sup>9</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>3</sup> / <sub>4</sub>	7 <sup>9</sup> / <sub>16</sub>	5 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	7	59°48'
46°	9 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	4	6 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	6	6 <sup>3</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>2</sub>	7 <sup>5</sup> / <sub>32</sub>	59°11'
45°	9 <sup>1</sup> / <sub>4</sub>	4 <sup>7</sup> / <sub>32</sub>	6 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	58°34'
44°	9 <sup>3</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>3</sup> / <sub>32</sub>	9 <sup>5</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	3 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>2</sub>	57°58'
43°	8 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	4 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	7 <sup>5</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	6 <sup>7</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	4	7 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	57°22'
42°	8 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	7 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	9	6 <sup>9</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>3</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>8</sub>	56°46'
41°	8 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>4</sub>	10 <sup>5</sup> / <sub>32</sub>	9 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>32</sub>	56°11'
40°	8 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>7</sup> / <sub>32</sub>	55°35'
39°	8 <sup>1</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>16</sub>	10 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	4 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>8</sub>	55°01'
38°	8 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>9</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	8 <sup>9</sup> / <sub>16</sub>	54°27'
37°	7 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	11 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	10 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	5 <sup>1</sup> / <sub>8</sub>	8 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	53°55'
36°	7 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	6 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	*11 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	11 <sup>5</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>16</sub>	8 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	53°22'
35°	7 <sup>1</sup> / <sub>2</sub>	7	9 <sup>7</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	11 <sup>9</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	7 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>3</sup> / <sub>32</sub>	52°50'
34°	7 <sup>5</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	*10 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	12	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>4</sub>	52°19'
33°	7 <sup>1</sup> / <sub>8</sub>	7 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	*10 <sup>9</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>16</sub>	51°49'
32°	6 <sup>1</sup> / <sub>8</sub> <sup>1</sup> / <sub>6</sub>	8 <sup>1</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>8</sub>	*10 <sup>5</sup> / <sub>16</sub>	*11 <sup>3</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>3</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	51°19'
31°	6 <sup>3</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	*9 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	*10 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	6 <sup>1</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>16</sub>	9 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	50°49'
30°	6 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	*9 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	*10 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	50°20'
29°	6 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>7</sup> / <sub>16</sub>	11 <sup>7</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>2</sub> <sup>2</sup> / <sub>2</sub>	*9 <sup>2</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	6 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	10 <sup>1</sup> / <sub>8</sub>	49°52'
28°	6 <sup>1</sup> / <sub>8</sub>	9 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	*8 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	*9 <sup>7</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	7 <sup>5</sup> / <sub>32</sub>	10 <sup>9</sup> / <sub>32</sub>	49°24'
27°	5 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	10 <sup>7</sup> / <sub>16</sub>	11 <sup>3</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	*8 <sup>9</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>32</sub>	6 <sup>9</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>8</sub>	10 <sup>7</sup> / <sub>16</sub>	48°56'
26°	5 <sup>3</sup> / <sub>8</sub>	11	*11 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	*7 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	*8 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>8</sub>	10 <sup>6</sup> / <sub>8</sub>	48°30'
25°	5 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	11 <sup>5</sup> / <sub>8</sub>	*11 <sup>1</sup> / <sub>8</sub>	*7 <sup>1</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	*8 <sup>9</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>8</sub>	9 <sup>5</sup> / <sub>16</sub>	7 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	10 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	48°05'
24°	5 <sup>5</sup> / <sub>16</sub>	*11 <sup>3</sup> / <sub>4</sub>	*10 <sup>2</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	*7 <sup>1</sup> / <sub>4</sub>	*7 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>16</sub>	8 <sup>5</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	47°39'
23°	5 <sup>3</sup> / <sub>32</sub>	*11 <sup>3</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>4</sub>	*6 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	*7 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	11 <sup>3</sup> / <sub>32</sub>	47°16'
22°	4 <sup>7</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>2</sub>	*9 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	*6 <sup>9</sup> / <sub>16</sub>	*7 <sup>3</sup> / <sub>16</sub>	5 <sup>2</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>2</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	8 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	11 <sup>1</sup> / <sub>4</sub>	46°53'
21°	4 <sup>1</sup> / <sub>1</sub> <sup>1</sup> / <sub>6</sub>	*9 <sup>2</sup> / <sub>9</sub> <sup>2</sup> / <sub>2</sub>	*9 <sup>1</sup> / <sub>3</sub> <sup>2</sup> / <sub>2</sub>	*6 <sup>1</sup> / <sub>4</sub>	*6 <sup>1</sup> / <sub>3</sub> <sup>1</sup> / <sub>6</sub>	5 <sup>5</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	11 <sup>3</sup> / <sub>8</sub>	46°31'
20°	4 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	*9 <sup>1</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	*8 <sup>3</sup> / <sub>1</sub> <sup>2</sup> / <sub>2</sub>	*5 <sup>1</sup> / <sub>5</sub> <sup>1</sup> / <sub>6</sub>	*6 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>5</sub> <sup>2</sup> / <sub>2</sub>	9 <sup>7</sup> / <sub>8</sub>	9 <sup>7</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>7</sub> <sup>2</sup> / <sub>2</sub>	46°09'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

10" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*10 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	2 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	2 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	74°45'
69°	*10 <sup>2</sup> <sup>2</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	2 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	3 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	2 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	2 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	74°01'
68°	*10 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	7/8	2 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	3 <sup>2</sup> <sup>8</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	2 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>8</sub>	73°16'
67°	*10 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	3 <sup>2</sup> <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>4</sub>	3 <sup>5</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	3 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	72°31'
66°	*10 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	3 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	71°46'
65°	*11 <sup>1</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>8</sub>	4 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>8</sub>	71°02'
64°	*11 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	3 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>4</sub>	4 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	1 <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	70°18'
63°	*11 <sup>7</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>8</sub>	3 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	4 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	3 <sup>2</sup> <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>4</sub>	3 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	4 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	69°33'
62°	*11 <sup>5</sup> / <sub>16</sub>	1 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	3 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	4 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	3 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	1 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>8</sub>	68°50'
61°	*11 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	3 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	3 <sup>2</sup> <sup>9</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	4 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	68°07'
60°	*11 <sup>9</sup> / <sub>16</sub>	1 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>16</sub>	4 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>8</sub>	5	67°23'
59°	*11 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	1 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>32</sub>	66°40'
58°	*11 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	1 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	4 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	4 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	1 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	5 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	65°58'
57°	*11 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	4 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	6	5	5 <sup>3</sup> / <sub>32</sub>	4 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	1 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	65°15'
56°	11 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	4 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	5 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	64°32'
55°	11 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>8</sub>	4 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	6 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>8</sub>	63°51'
54°	11 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	2 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	5	6 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	4 <sup>7</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	63°09'
53°	11 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>	6 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>6</sub>	5 <sup>5</sup> / <sub>8</sub>	5	2 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>4</sub>	62°27'
52°	11 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	2 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	6	5 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	61°45'
51°	11 <sup>3</sup> / <sub>16</sub>	3	5 <sup>7</sup> / <sub>16</sub>	7 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>32</sub>	2 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	61°04'
50°	11 <sup>1</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	5 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	7 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	6	5 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>8</sub>	6 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	60°25'
49°	10 <sup>7</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>8</sub>	5 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	8	6 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	7	59°43'
48°	10 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	8 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>16</sub>	59°03'
47°	10 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	6 <sup>3</sup> / <sub>32</sub>	8 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	6 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>8</sub>	58°23'
46°	10 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	3 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	8 <sup>2</sup> <sup>9</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	7 <sup>9</sup> / <sub>16</sub>	57°43'
45°	10 <sup>3</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>32</sub>	7 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>4</sub>	57°06'
44°	10	4 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	9 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	7 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	6 <sup>5</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>32</sub>	3 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	7 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	56°26'
43°	9 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	9 <sup>7</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	6 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	6 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>32</sub>	55°48'
42°	9 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>8</sub>	7	10 <sup>7</sup> / <sub>32</sub>	8 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	6 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	4 <sup>7</sup> / <sub>32</sub>	8 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	55°11'
41°	9 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>16</sub>	10 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	8 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	8 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	54°33'
40°	9 <sup>1</sup> / <sub>4</sub>	5 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	11	9 <sup>5</sup> / <sub>32</sub>	6 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>4</sub>	4 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>4</sub>	53°57'
39°	9 <sup>1</sup> / <sub>16</sub>	5 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>2</sub>	7	6 <sup>7</sup> / <sub>8</sub>	4 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	8 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	53°20'
38°	8 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	7 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	11 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	9 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	7	5	9 <sup>1</sup> / <sub>8</sub>	52°44'
37°	8 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>16</sub>	*11 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>16</sub>	52°08'
36°	8 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	6 <sup>9</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>32</sub>	*11 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	10 <sup>9</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	9 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	51°34'
35°	8 <sup>1</sup> / <sub>4</sub>	6 <sup>2</sup> <sup>9</sup> / <sub>32</sub>	8 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	*10 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	10 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>8</sub>	9 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	50°59'
34°	8 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>4</sub>	8 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	*10 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>2</sub>	5 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	9 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	50°25'
33°	7 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>8</sub>	11 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>32</sub>	49°53'
32°	7 <sup>5</sup> / <sub>8</sub>	8	9 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	*9 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	*11 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>4</sub>	6 <sup>5</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>16</sub>	49°20'
31°	7 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>8</sub>	*9 <sup>3</sup> / <sub>8</sub>	*11 <sup>1</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>8</sub>	6 <sup>9</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>2</sub>	48°48'
30°	7 <sup>3</sup> / <sub>16</sub>	8 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	9 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>32</sub>	*10 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>32</sub>	8	6 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	10 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	48°18'
29°	6 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	9 <sup>9</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>32</sub>	*8 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	*10 <sup>3</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	47°47'
28°	6 <sup>3</sup> / <sub>4</sub>	9 <sup>2</sup> <sup>5</sup> / <sub>32</sub>	10 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	*8 <sup>5</sup> / <sub>16</sub>	*9 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>32</sub>	7 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>16</sub>	47°17'
27°	6 <sup>1</sup> <sup>7</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>16</sub>	10 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	*7 <sup>3</sup> <sup>1</sup> / <sub>32</sub>	*9 <sup>9</sup> / <sub>16</sub>	7	8 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	7 <sup>1</sup> <sup>9</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>4</sub>	46°48'
26°	6 <sup>5</sup> / <sub>16</sub>	10 <sup>7</sup> / <sub>8</sub>	11 <sup>3</sup> / <sub>8</sub>	*7 <sup>5</sup> / <sub>8</sub>	*9 <sup>5</sup> / <sub>32</sub>	6 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>16</sub>	46°20'
25°	6 <sup>3</sup> / <sub>32</sub>	11 <sup>1</sup> <sup>5</sup> / <sub>32</sub>	11 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	*7 <sup>9</sup> / <sub>32</sub>	*8 <sup>3</sup> / <sub>4</sub>	6 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	8 <sup>9</sup> / <sub>16</sub>	8 <sup>5</sup> / <sub>32</sub>	11 <sup>5</sup> / <sub>8</sub>	45°52'
24°	5 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	*11 <sup>2</sup> <sup>9</sup> / <sub>32</sub>	*11 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	*6 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	*3 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>4</sub>	8 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>16</sub>	11 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	45°24'
23°	5 <sup>5</sup> / <sub>8</sub>	*11 <sup>1</sup> / <sub>4</sub>	*11 <sup>3</sup> / <sub>16</sub>	*6 <sup>5</sup> / <sub>8</sub>	*7 <sup>8</sup> <sup>1</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	8 <sup>3</sup> / <sub>4</sub>	8 <sup>3</sup> / <sub>4</sub>	12	44°56'
22°	5 <sup>3</sup> / <sub>8</sub>	*10 <sup>5</sup> / <sub>8</sub>	*10 <sup>2</sup> <sup>3</sup> / <sub>32</sub>	*6 <sup>5</sup> / <sub>16</sub>	*7 <sup>9</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	8 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	*11 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	44°33'
21°	5 <sup>1</sup> / <sub>8</sub>	*10 <sup>1</sup> <sup>3</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>4</sub>	*6	*7 <sup>7</sup> / <sub>16</sub>	6 <sup>1</sup> <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	9 <sup>3</sup> / <sub>8</sub>	*11 <sup>2</sup> <sup>1</sup> / <sub>32</sub>	44°11'
20°	4 <sup>1</sup> <sup>5</sup> / <sub>16</sub>	*9 <sup>7</sup> / <sub>16</sub>	*9 <sup>2</sup> <sup>7</sup> / <sub>32</sub>	*5 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	*6 <sup>1</sup> <sup>3</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>32</sub>	9 <sup>1</sup> <sup>1</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>2</sub>	43°48'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

9" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*9 <sup>9</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	2 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	74°06'
69°	*9 <sup>7</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>2</sub>	2 <sup>2</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	73°19'
68°	*9 <sup>1</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>8</sub>	2 <sup>2</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>8</sub>	2 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	72°32'
67°	*9 <sup>2</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	71°46'
66°	*9 <sup>2</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	4	3 <sup>1</sup> / <sub>32</sub>	1	4 <sup>1</sup> / <sub>8</sub>	71°00'
65°	*9 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>16</sub>	70°13'
64°	*10 <sup>1</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>4</sub>	3 <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	4 <sup>5</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>2</sub>	69°26'
63°	*10 <sup>1</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	68°40'
62°	*10 <sup>3</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>8</sub>	67°54'
61°	*10 <sup>5</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>16</sub>	4	4 <sup>2</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	67°08'
60°	*10 <sup>1</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	66°24'
59°	*10 <sup>1</sup> / <sub>2</sub>	1 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>16</sub>	65°38'
58°	*10 <sup>5</sup> / <sub>8</sub>	1 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	6	4 <sup>1</sup> / <sub>2</sub>	5 <sup>1</sup> / <sub>4</sub>	4 <sup>1</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	64°53'
57°	*10 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	64°08'
56°	*10 <sup>7</sup> / <sub>8</sub>	2 <sup>3</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>8</sub>	5 <sup>9</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	6	63°23'
55°	*11	2 <sup>5</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	6 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	5 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>16</sub>	62°41'
54°	*11 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>8</sub>	7	5 <sup>7</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>8</sub>	61°55'
53°	*11 <sup>9</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>16</sub>	6	4 <sup>2</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	61°11'
52°	*11 <sup>7</sup> / <sub>16</sub>	2 <sup>2</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>2</sub>	5 <sup>5</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	60°28'
51°	*11 <sup>9</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	6 <sup>9</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	7	59°45'
50°	*11 <sup>3</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	59°03'
49°	*11 <sup>5</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>4</sub>	6 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>	3	7 <sup>1</sup> / <sub>32</sub>	58°18'
48°	11 <sup>7</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	57°36'
47°	11 <sup>1</sup> / <sub>16</sub>	3 <sup>2</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>8</sub>	3 <sup>5</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	56°55'
46°	11 <sup>1</sup> / <sub>2</sub>	3 <sup>7</sup> / <sub>8</sub>	5 <sup>2</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>32</sub>	3	56°13'
45°	11 <sup>5</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>8</sub>	3 <sup>2</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>32</sub>	55°31'
44°	11 <sup>1</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>4</sub>	3 <sup>1</sup> / <sub>16</sub>	8 <sup>7</sup> / <sub>16</sub>	54°50'
43°	10 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>2</sub>	6 <sup>1</sup> / <sub>4</sub>	10 <sup>9</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	7 <sup>9</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>8</sub>	4	8 <sup>2</sup> / <sub>32</sub>	54°09'
42°	10 <sup>2</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>4</sub>	6 <sup>7</sup> / <sub>16</sub>	10 <sup>2</sup> / <sub>32</sub>	8	7 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>8</sub>	53°30'
41°	10 <sup>1</sup> / <sub>2</sub>	5	6 <sup>1</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>32</sub>	8 <sup>9</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	9 <sup>3</sup> / <sub>32</sub>	52°50'
40°	10 <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	6 <sup>2</sup> / <sub>32</sub>	11 <sup>7</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>32</sub>	7 <sup>9</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>16</sub>	52°12'
39°	10 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	11 <sup>7</sup> / <sub>8</sub>	8 <sup>2</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>16</sub>	4 <sup>2</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>32</sub>	51°33'
38°	9 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>16</sub>	7 <sup>5</sup> / <sub>32</sub>	*11 <sup>2</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>16</sub>	5	9 <sup>3</sup> / <sub>4</sub>	50°55'
37°	9 <sup>5</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	*11 <sup>9</sup> / <sub>32</sub>	9 <sup>9</sup> / <sub>16</sub>	7 <sup>2</sup> / <sub>32</sub>	6 <sup>9</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>32</sub>	50°16'
36°	9 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	7 <sup>9</sup> / <sub>16</sub>	*10 <sup>2</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	6 <sup>2</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>16</sub>	49°39'
35°	9 <sup>3</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>4</sub>	7 <sup>2</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>2</sub>	10 <sup>9</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	6 <sup>2</sup> / <sub>32</sub>	5 <sup>2</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	49°04'
34°	8 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>32</sub>	8	*10 <sup>1</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>8</sub>	10 <sup>5</sup> / <sub>8</sub>	48°26'
33°	8 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>4</sub>	*9 <sup>3</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>32</sub>	7	6 <sup>1</sup> / <sub>8</sub>	10 <sup>2</sup> / <sub>32</sub>	47°52'
32°	8 <sup>1</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>2</sub>	*9 <sup>3</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>2</sub>	8	7 <sup>1</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>16</sub>	47°16'
31°	8 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>4</sub>	*9 <sup>1</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>32</sub>	8	7 <sup>7</sup> / <sub>32</sub>	6 <sup>2</sup> / <sub>32</sub>	11 <sup>5</sup> / <sub>16</sub>	46°42'
30°	8	8 <sup>5</sup> / <sub>8</sub>	9	*8 <sup>2</sup> / <sub>32</sub>	*11 <sup>9</sup> / <sub>16</sub>	8	7 <sup>5</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>32</sub>	46°09'
29°	7 <sup>3</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>4</sub>	*8 <sup>5</sup> / <sub>16</sub>	*11 <sup>3</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	11 <sup>3</sup> / <sub>4</sub>	45°34'
28°	7 <sup>1</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>32</sub>	9 <sup>9</sup> / <sub>16</sub>	*8	*10 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>2</sub>	7 <sup>1</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>32</sub>	45°01'
27°	7 <sup>9</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>8</sub>	*7 <sup>2</sup> / <sub>32</sub>	*10 <sup>3</sup> / <sub>16</sub>	7 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>4</sub>	*11 <sup>1</sup> / <sub>16</sub>	44°31'
26°	7 <sup>1</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>8</sub>	10 <sup>1</sup> / <sub>4</sub>	*7 <sup>5</sup> / <sub>16</sub>	*9 <sup>3</sup> / <sub>4</sub>	7 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	*11 <sup>9</sup> / <sub>32</sub>	44°02'
25°	6 <sup>3</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>8</sub>	*7	*9 <sup>5</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>4</sub>	7 <sup>2</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>8</sub>	*11 <sup>1</sup> / <sub>32</sub>	43°32'
24°	6 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>16</sub>	11	*6 <sup>1</sup> / <sub>16</sub>	*8 <sup>7</sup> / <sub>8</sub>	7 <sup>2</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>16</sub>	*11 <sup>3</sup> / <sub>16</sub>	43°04'
23°	6 <sup>1</sup> / <sub>4</sub>	*11 <sup>7</sup> / <sub>32</sub>	11 <sup>7</sup> / <sub>16</sub>	*6 <sup>3</sup> / <sub>8</sub>	*8 <sup>1</sup> / <sub>32</sub>	7 <sup>9</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>32</sub>	*11	42°36'
22°	6	*10 <sup>2</sup> / <sub>32</sub>	11 <sup>2</sup> / <sub>32</sub>	*6 <sup>1</sup> / <sub>16</sub>	*8 <sup>3</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>8</sub>	*10 <sup>2</sup> / <sub>32</sub>	42°10'
21°	5 <sup>3</sup> / <sub>4</sub>	*10 <sup>9</sup> / <sub>32</sub>	*11 <sup>9</sup> / <sub>16</sub>	*5 <sup>3</sup> / <sub>4</sub>	*7 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>8</sub>	9 <sup>2</sup> / <sub>32</sub>	*10 <sup>2</sup> / <sub>32</sub>	41°43'
20°	5 <sup>1</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>32</sub>	*7 <sup>9</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>32</sub>	41°15'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

8" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*8 1/2	1 1/16	2 5/16	3 5/8	2 7/16	3 1/2	2 5/16	1 1/16	3 9/16	73°27'
69°	*8 9/16	3/4	2 7/16	3 2 7/32	2 9/16	3 1 1/16	2 7/16	3/4	3 3/4	72°39'
68°	*8 5/8	2 7/32	2 9/16	4 1/32	2 1 1/16	3 2 7/32	2 9/16	1 3/16	3 5 1/16	71°50'
67°	*8 1 1/16	2 9/32	2 2 1/32	4 1/4	2 1 3/16	4	2 2 1/32	2 9/32	4 1/8	71°01'
66°	*8 3/4	1	2 2 5/32	4 1 5/32	2 3 1/32	4 3/16	2 2 5/32	3 1/32	4 5/16	70°12'
65°	*8 1 3/16	1 3/32	2 2 9/32	4 2 1/32	3 3/32	4 3/8	2 2 9/32	1 1/16	4 1/2	69°24'
64°	*8 7/8	1 3/16	3 1/32	4 7/8	3 1/4	4 1 7/32	3	1 5/32	4 1 1/16	68°36'
63°	*8 3 1/32	1 9/32	3 1/8	5 3/32	3 3/8	4 2 3/32	3 1/8	1 1/4	4 2 9/32	67°47'
62°	*9 1/32	1 3/8	3 1/4	5 5/16	3 1 7/32	4 7/8	3 1/4	1 1 1/32	5 3/32	66°59'
61°	*9 1/8	1 5 1/32	3 3/8	5 1 7/32	3 1 1/16	5 1/16	3 1 1/32	1 7/16	5 9/32	66°12'
60°	*9 1/4	1 9/32	3 1/2	5 3/4	3 2 7/32	5 7/32	3 1 5/32	1 7/32	5 1/2	65°29'
59°	*9 5/16	1 2 3/32	3 5/8	6	4	5 3/8	3 9/16	1 5/8	5 1 1/16	64°36'
58°	*9 1 3/32	1 1 3/16	3 2 3/32	6 7/32	4 5/32	5 9/16	3 1 1/16	1 3/4	5 2 9/32	63°49'
57°	*9 1 1/32	1 1 5/16	3 2 7/32	6 1/2	4 5/16	5 2 3/32	3 1 3/16	1 7/8	6 3/32	63°02'
56°	*9 2 1/32	2 3/32	3 3 1/32	6 3/4	4 1/2	5 2 9/32	3 2 9/32	1 3 1/32	6 5/16	62°15'
55°	*9 2 5/32	2 7/32	4 3/32	7	4 2 1/32	6 1/16	4 1/32	2 3/32	6 1 7/32	61°30'
54°	*9 7/8	2 1 1/32	4 7/32	7 1/4	4 2 7/32	6 7/32	4 1/8	2 7/32	6 3/4	60°42'
53°	*10	2 1/2	4 1 1/32	7 1 7/32	5 1/32	6 1 3/32	4 1/4	2 1 1/32	6 1 5/16	59°56'
52°	*10 1/8	2 2 1/32	4 1 5/32	7 1 3/16	5 3/32	6 9/16	4 3/8	2 1/2	7 5/32	59°11'
51°	*10 9/32	2 1 3/16	4 1 9/32	8 3/32	5 1 3/32	6 2 3/32	4 1 5/32	2 5/8	7 3/8	58°24'
50°	*10 7/16	3	4 2 3/32	8 3/8	5 1 9/32	6 7/8	4 1 9/32	2 2 5/32	7 1 9/32	57°40'
49°	*10 1 9/32	3 5/32	4 2 7/32	8 1 1/16	5 1 3/16	7 1/32	4 1 1/16	2 1 5/16	7 1 3/16	56°53'
48°	*10 3/4	3 1 1/32	4 3 1/32	9	6	7 3/16	4 1 3/16	3 1/16	8 1/16	56°09'
47°	*10 5 1/16	3 1 7/32	5 3/32	9 5/16	6 7/32	7 1 1/32	4 2 9/32	3 1/4	8 9/32	55°25'
46°	*11 1/8	3 2 3/32	5 1/4	9 2 1/32	6 7/16	7 1/2	5	3 1 3/32	8 1/2	54°41'
45°	*11 5/16	3 2 9/32	5 3/8	10	6 2 1/32	7 5/8	5 1/8	3 9/16	8 2 3/32	53°58'
44°	*11 1/2	4 1/8	5 1/2	10 1 1/32	6 2 9/32	7 2 5/32	5 7/32	3 3/4	8 3 1/32	53°14'
43°	*11 2 3/32	4 3/8	5 2 1/32	10 1 1/16	7 1/8	7 2 9/32	5 5/16	3 1 5/16	9 3/16	52°31'
42°	*11 3 1/32	4 1 9/32	5 1 3/16	11 3/32	7 3/8	8 1/32	5 7/16	4 1/8	9 7/16	51°48'
41°	11 2 5/32	4 1 3/16	5 3 1/32	11 1 5/32	7 2 1/32	8 5/32	5 1 7/32	4 5/16	9 1 1/16	51°05'
40°	11 9/16	5 1/16	6 1/8	11 2 9/32	7 1 5/16	8 9/32	5 5/8	4 1/2	9 5 1/16	50°24'
39°	11 5/16	5 5/16	6 9/32	*11 2 1/32	8 7/32	8 3/8	5 3/4	4 2 3/32	10 5/32	49°43'
38°	11 1/16	5 1 9/32	6 7/16	*11 1/4	8 1 7/32	8 1/2	5 2 7/32	4 1 5/16	10 1 3/32	49°02'
37°	10 1 3/16	5 7/8	6 5/8	*10 7/8	8 2 7/32	8 1 9/32	5 1 5/16	5 1/8	10 2 1/32	48°23'
36°	10 9/16	6 5/32	6 2 5/32	*10 1/2	9 5/32	8 1 1/16	6 1/32	5 3/8	10 2 9/32	47°44'
35°	10 5/16	6 1 5/32	6 3 1/32	*10 3/32	9 1/2	8 3/4	6 1/8	5 1 9/32	11 3/16	47°05'
34°	10 1/16	6 1 3/16	7 5/32	*9 3/4	9 7/8	8 1 3/16	6 7/32	5 2 7/32	11 7/16	46°27'
33°	9 2 5/32	7 1/8	7 1 1/32	*9 3/8	10 1/4	8 7/8	6 5/16	6 3/32	11 1 1/16	45°50'
32°	9 1 1/32	7 1/2	7 9/16	*9	10 2 1/32	8 1 5/16	6 3/8	6 1 1/32	11 5 1/16	45°12'
31°	9 9/32	7 7/8	7 2 5/32	*8 2 1/32	11 1/16	8 3 1/32	6 1 5/32	6 5/8	*11 2 5/32	44°33'
30°	9	8 5/16	8	*8 5/16	11 1 7/32	9	6 9/16	6 2 9/32	*11 9/16	43°54'
29°	8 2 3/32	8 3/4	8 1/4	*8	11 3 1/32	9	6 2 1/32	7 3/16	*11 5/16	43°19'
28°	8 7/16	9 7/32	8 1/2	*7 1 1/16	*11 1 7/32	9	6 2 3/32	7 1/2	*11 3/32	42°42'
27°	8 5/32	9 1 1/16	8 3/4	*7 3/8	*11 1/32	8 3 1/32	6 1 3/16	7 1 3/16	*10 7/8	42°08'
26°	7 2 9/32	10 7/32	9 1/16	*7 1/16	*10 9/16	8 1 5/16	6 2 9/32	8 1/8	*10 2 1/32	41°35'
25°	7 1 9/32	10 2 5/32	9 3/8	*6 2 3/32	*10 3/32	8 7/8	6 3 1/32	8 1 5/32	*10 7/16	41°03'
24°	7 5/16	11 3/8	9 2 3/32	*6 7/16	*9 5/8	8 2 5/32	7 1/16	8 1 3/16	*10 1/4	40°32'
23°	7	12	10 1/16	*6 1/8	*9 3/16	8 1 1/16	7 1/8	9 7/32	*10 1/16	40°02'
22°	6 2 3/32	*11 5/16	10 1 9/32	*5 1 3/16	*8 3/4	8 9/16	7 3/16	9 1 9/32	*9 7/8	39°32'
21°	6 7/16	*10 1 1/16	10 2 9/32	*5 1 7/32	*8 5/16	8 1 3/32	7 1/4	9 3 1/32	*9 2 3/32	39°04'
20°	6 5/32	*10 1/16	11 1 3/32	*5 1/4	*7 7/8	8 1/4	7 1 1/32	10 3/8	*9 9/16	38°34'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

7" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*7 7/16	2 1/32	2 3/32	3 2 5/32	2 3/16	3 2 1/32	2 3/32	5/8	3 2 3/32	72°49'
69°	*7 1/2	3/32	2 3/16	3 3 1/32	2 5/16	3 1 3/16	2 7/32	1 1/16	3 2 9/32	71°57'
68°	*7 1 7/32	2 5/32	2 5/16	4 3/16	2 7/16	4	2 5/16	2 5/32	4 1/8	71°06'
67°	*7 1 9/32	7/8	2 1 3/32	4 1 3/32	2 9/16	4 3/16	2 1 3/32	2 7/32	4 3/16	70°16'
66°	*7 1 1/32	1 5/16	2 1/2	4 5/8	2 1 1/16	4 3/8	2 1/2	1 5/16	4 1/2	69°25'
65°	*7 2 3/32	1 1/32	2 5/8	4 2 7/32	2 1 3/16	4 9/16	2 5/8	1	4 2 3/32	68°35'
64°	*7 2 5/32	1 1/8	2 2 3/32	5 1/16	2 1 5/16	4 3/4	2 2 3/32	1 3/32	4 2 9/32	67°43'
63°	*7 2 7/32	1 3/16	2 2 7/32	5 3/32	3 3/32	4 1 5/16	2 1 3/16	1 3/16	5 1/8	66°53'
62°	*7 2 9/32	1 9/32	2 1 9/16	5 1 7/32	3 7/32	5 1/8	2 2 9/32	1 9/32	5 5/16	66°03'
61°	*8	1 1 3/32	3 1/32	5 3/4	3 1 1/32	5 5/16	3 1/32	1 3/8	5 1 7/32	65°13'
60°	*8 3/32	1 1/2	3 5/32	6	3 1/2	5 1 7/32	3 1/8	1 1 5/32	5 3/4	64°24'
59°	*8 5/32	1 5/8	3 1/4	6 1/4	3 5/8	5 2 3/32	3 7/32	1 9/16	5 3 1/32	63°32'
58°	*8 1/4	1 2 3/32	3 3/8	6 1/2	3 2 5/32	5 2 9/32	5 5/16	1 2 1/32	6 3/16	62°43'
57°	*8 1 1/32	1 2 7/32	3 1 9/32	6 3/4	3 1 9/16	6 3/32	3 1 3/32	1 2 5/32	6 1 3/32	61°54'
56°	*8 7/16	1 3 1/32	3 9/16	7	4 1/16	6 9/32	3 1 7/32	1 7/8	6 5/8	61°06'
55°	*8 1 7/32	2 3/32	3 1 1/16	7 1/4	4 7/32	6 1 5/32	3 5/8	2	6 2 7/32	60°17'
54°	*8 2 1/32	2 7/32	3 2 5/32	7 1 7/32	4 3/8	6 2 1/32	3 2 3/32	2 1/8	7 1/16	59°28'
53°	*8 3/4	2 3/8	3 7/8	7 1 3/16	4 9/16	6 2 7/32	3 1 3/16	2 1/4	7 5/16	58°39'
52°	*8 7/8	2 1 7/32	4	8 3/32	4 2 3/32	7 1/32	3 2 9/32	2 3/8	7 1 7/32	57°51'
51°	*9	2 2 1/32	4 3/8	8 3/8	4 7/8	7 3/16	4	2 1 7/32	7 2 3/32	57°03'
50°	*9 1/8	2 1 3/16	4 7/32	8 1 1/16	5 1/16	7 3/8	4 3/32	2 2 1/32	8	56°16'
49°	*9 1/4	3	4 1 1/32	9	5 1/4	7 7/16	4 3/16	2 1 3/16	8 1/4	55°28'
48°	*9 1/16	3 1/8	4 7/16	9 5/16	5 7/16	7 1 1/16	4 9/32	2 3 1/32	8 1/2	54°40'
47°	*9 9/16	3 5/16	4 9/16	9 2 1/32	5 5/8	7 1 3/16	4 3/8	3 3/32	8 3/4	53°53'
46°	*9 2 3/32	3 1/2	4 2 1/32	10	5 1 3/16	7 1 5/32	4 1/2	3 1/4	9	53°08'
45°	*9 2 9/32	3 1 1/16	4 2 5/32	10 3/8	6 1/32	8 9/32	4 9/16	3 7/16	9 1/4	52°21'
44°	*10 3/32	3 7/8	4 2 9/32	10 2 3/32	6 1/4	8 7/16	4 2 1/32	3 1 9/32	9 1/2	51°35'
43°	*10 1/4	4 1/16	5 1/32	11 3/32	6 1/2	8 5/8	4 3/4	3 2 5/32	9 2 5/32	50°48'
42°	*10 1 5/32	4 5/16	5 5/32	11 1/2	6 2 3/32	8 2 5/32	4 2 7/32	3 3 1/32	10 1/32	50°02'
41°	*10 1 1/16	4 1 7/32	5 9/32	11 2 3/32	6 3 1/32	8 1 9/16	4 1 9/16	4 5/32	10 7/16	49°18'
40°	*10 7/8	4 2 5/32	5 1 3/32	*11 2 1/32	7 7/32	9 3/32	5 1/32	4 1 1/32	10 1 9/32	48°34'
39°	*11 3/32	5	5 1 7/32	*11 1/4	7 1 5/32	9 1/4	5 1/8	4 9/16	10 2 7/32	47°51'
38°	*11 3/8	5 1/4	5 2 1/32	*10 2 3/32	7 3/4	9 3/8	5 3/16	4 3/4	11 1/8	47°08'
37°	*11 5/8	5 1 9/32	5 1 3/16	*10 1 5/32	8 1/2	9 1/2	5 9/32	4 3 1/32	11 1 9/32	46°25'
36°	*11 7/8	5 1 1/16	5 1 9/16	*10 3/32	8 5/16	9 5/8	5 1 3/32	5 7/32	11 1 1/16	45°44'
35°	11 1 3/16	6 1/8	6 3/32	*9 2 3/32	8 5/8	9 3/4	5 7/16	5 7/16	12	45°02'
34°	11 1/2	6 1 3/32	6 1/4	*9 9/8	8 3 1/32	9 7/8	5 1 7/32	5 1 1/16	*11 1 1/16	44°18'
33°	11 7/32	6 2 3/32	6 7/16	*9 1/32	9 5/16	9 3 1/32	5 1 9/32	5 1 5/16	*11 7/16	43°38'
32°	10 2 9/32	7 1/16	6 1 9/32	*8 1 1/16	9 2 1/32	10 1/16	5 1 1/16	6 3/16	*11 3/32	42°56'
31°	10 1 9/32	7 1/16	6 2 5/32	*8 1 1/32	10 1/16	10 1/8	5 3/4	6 1 5/32	*10 2 3/32	42°16'
30°	10 9/32	7 2 7/32	6 1 5/16	*8 1/32	10 1 5/32	10 3/16	5 1 3/16	6 2 5/32	*10 2 1/32	41°36'
29°	9 1 5/16	8 7/32	7 3/32	*7 1 1/16	10 2 9/32	10 1/4	5 7/8	7 1/16	*10 1 3/32	40°57'
28°	9 2 1/32	8 2 1/32	7 3/8	*7 3/8	11 3/8	10 9/32	5 3 1/32	7 1 3/32	*10 3/16	40°19'
27°	9 9/16	9 3/32	7 1 9/32	*7 1/16	11 2 7/32	10 9/32	6 1/32	7 2 3/32	*9 3 1/32	39°42'
26°	9 1/32	9 1 9/32	7 1 3/16	*6 2 3/32	*11 5/8	10 9/32	6 3/32	8 1/16	*9 3/4	39°06'
25°	8 1 1/16	10 5/32	8 1/16	*6 1 5/32	*11 3/32	10 1/4	6 5/32	8 7/16	*9 1 7/32	38°29'
24°	8 3/8	10 2 3/32	8 1 3/32	*6 3/16	*10 1 9/32	10 3/16	6 7/32	8 1 3/16	*9 5/16	37°55'
23°	8 1/16	11 5/16	8 1 9/32	*5 7/8	*10 3/32	10 1/8	6 9/32	9 7/32	*9 6/32	37°21'
22°	7 2 3/32	12	9 3/32	*5 5/8	*9 5/8	10 1/32	6 1 3/32	9 5/8	*8 3 1/32	36°48'
21°	7 3/8	*11 1 1/32	9 1 3/32	*5 1 1/32	*9 1/8	9 2 9/32	6 1 9/32	10 1/16	*8 2 3/32	36°16'
20°	7 1/32	*10 1 1/16	9 2 3/32	*5 1/16	*8 2 3/32	9 3/4	6 7/16	10 1/2	*8 5/8	35°44'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

6" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*6 <sup>3</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>8</sub>	3 <sup>29</sup> / <sub>32</sub>	1 <sup>31</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	1 <sup>27</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	3 <sup>27</sup> / <sub>32</sub>	72°10'
69°	*6 <sup>7</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	1 <sup>15</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>16</sub>	4	1 <sup>15</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	71°17'
68°	*6 <sup>15</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>16</sub>	4 <sup>3</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>32</sub>	70°24'
67°	*6 <sup>1</sup> / <sub>2</sub>	2 <sup>5</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	69°32'
66°	*6 <sup>9</sup> / <sub>16</sub>	7 <sup>8</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	4 <sup>25</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	4 <sup>11</sup> / <sub>16</sub>	68°39'
65°	*6 <sup>5</sup> / <sub>8</sub>	1 <sup>6</sup> / <sub>16</sub>	2 <sup>6</sup> / <sub>16</sub>	5	2 <sup>1</sup> / <sub>2</sub>	4 <sup>25</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	1 <sup>5</sup> / <sub>16</sub>	4 <sup>29</sup> / <sub>32</sub>	67°47'
64°	*6 <sup>11</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	2 <sup>5</sup> / <sub>8</sub>	5	2 <sup>13</sup> / <sub>32</sub>	1	5 <sup>1</sup> / <sub>8</sub>	66°53'
63°	*6 <sup>3</sup> / <sub>4</sub>	1 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	5 <sup>15</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	66°01'
62°	*6 <sup>18</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>16</sub>	2 <sup>19</sup> / <sub>32</sub>	5 <sup>23</sup> / <sub>32</sub>	2 <sup>27</sup> / <sub>32</sub>	5 <sup>13</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>16</sub>	65°07'
61°	*6 <sup>7</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	2 <sup>11</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	5 <sup>19</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>4</sub>	5 <sup>25</sup> / <sub>32</sub>	64°16'
60°	*6 <sup>15</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	2 <sup>25</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	5 <sup>13</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>4</sub>	1 <sup>11</sup> / <sub>32</sub>	6	63°26'
59°	*7	1 <sup>1</sup> / <sub>2</sub>	2 <sup>7</sup> / <sub>8</sub>	6 <sup>7</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	6	2 <sup>27</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>16</sub>	6 <sup>7</sup> / <sub>32</sub>	62°32'
58°	*7 <sup>1</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	6 <sup>11</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>16</sub>	6 <sup>15</sup> / <sub>32</sub>	61°40'
57°	*7 <sup>5</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>2</sub>	6 <sup>7</sup> / <sub>16</sub>	3	1 <sup>2</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	60°49'
56°	*7 <sup>1</sup> / <sub>4</sub>	1 <sup>13</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>4</sub>	3 <sup>5</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>4</sub>	6 <sup>15</sup> / <sub>16</sub>	59°58'
55°	*7 <sup>5</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>2</sub>	3 <sup>3</sup> / <sub>4</sub>	6 <sup>27</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>16</sub>	59°08'
54°	*7 <sup>13</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	7 <sup>13</sup> / <sub>16</sub>	3 <sup>29</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	7 <sup>13</sup> / <sub>32</sub>	58°16'
53°	*7 <sup>1</sup> / <sub>2</sub>	2 <sup>3</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>4</sub>	3 <sup>11</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	7 <sup>21</sup> / <sub>32</sub>	57°25'
52°	*7 <sup>5</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>2</sub>	8 <sup>13</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>16</sub>	7 <sup>15</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	7 <sup>29</sup> / <sub>32</sub>	56°33'
51°	*7 <sup>23</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	3 <sup>19</sup> / <sub>32</sub>	8 <sup>23</sup> / <sub>32</sub>	4 <sup>11</sup> / <sub>32</sub>	7 <sup>11</sup> / <sub>16</sub>	3 <sup>17</sup> / <sub>32</sub>	2 <sup>11</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>32</sub>	55°44'
50°	*7 <sup>27</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	3 <sup>11</sup> / <sub>16</sub>	9	4 <sup>1</sup> / <sub>2</sub>	7 <sup>29</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>16</sub>	54°53'
49°	*7 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	3 <sup>25</sup> / <sub>32</sub>	9 <sup>11</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>32</sub>	3 <sup>11</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>8</sub>	8 <sup>11</sup> / <sub>16</sub>	54°02'
48°	*8 <sup>3</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>8</sub>	9 <sup>21</sup> / <sub>32</sub>	4 <sup>27</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>16</sub>	3 <sup>25</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	8 <sup>13</sup> / <sub>32</sub>	53°12'
47°	*8 <sup>7</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	10	5	8 <sup>17</sup> / <sub>32</sub>	3 <sup>27</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	9 <sup>7</sup> / <sub>32</sub>	52°24'
46°	*8 <sup>11</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>16</sub>	8 <sup>3</sup> / <sub>4</sub>	3 <sup>15</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>2</sub>	51°34'
45°	*8 <sup>1</sup> / <sub>2</sub>	3 <sup>13</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	10 <sup>23</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>8</sub>	8 <sup>15</sup> / <sub>16</sub>	4	3 <sup>7</sup> / <sub>32</sub>	9 <sup>13</sup> / <sub>16</sub>	50°46'
44°	*8 <sup>21</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>8</sub>	10 <sup>3</sup> / <sub>32</sub>	49°56'
43°	*8 <sup>13</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>	4 <sup>11</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>4</sub>	9 <sup>11</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	3 <sup>17</sup> / <sub>32</sub>	10 <sup>3</sup> / <sub>8</sub>	49°08'
42°	*8 <sup>3</sup> / <sub>16</sub>	3 <sup>31</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>16</sub>	11 <sup>29</sup> / <sub>32</sub>	5 <sup>31</sup> / <sub>32</sub>	9 <sup>9</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>32</sub>	3 <sup>23</sup> / <sub>32</sub>	10 <sup>11</sup> / <sub>16</sub>	48°20'
41°	*9 <sup>5</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>16</sub>	9 <sup>3</sup> / <sub>4</sub>	4 <sup>5</sup> / <sub>16</sub>	3 <sup>29</sup> / <sub>32</sub>	11	47°32'
40°	*9 <sup>1</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	4 <sup>21</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>4</sub>	6 <sup>13</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>32</sub>	11 <sup>9</sup> / <sub>32</sub>	46°45'
39°	*9 <sup>9</sup> / <sub>16</sub>	4 <sup>19</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>4</sub>	*10 <sup>7</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>8</sub>	10 <sup>5</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>32</sub>	11 <sup>19</sup> / <sub>32</sub>	45°58'
38°	*9 <sup>3</sup> / <sub>4</sub>	4 <sup>27</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>8</sub>	*10 <sup>15</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>8</sub>	10 <sup>11</sup> / <sub>32</sub>	4 <sup>17</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	11 <sup>29</sup> / <sub>32</sub>	45°09'
37°	*10	5 <sup>3</sup> / <sub>32</sub>	4 <sup>31</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>8</sub>	10 <sup>17</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	*11 <sup>3</sup> / <sub>4</sub>	44°24'
36°	*10 <sup>7</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	*9 <sup>3</sup> / <sub>4</sub>	7 <sup>5</sup> / <sub>8</sub>	10 <sup>23</sup> / <sub>32</sub>	4 <sup>21</sup> / <sub>32</sub>	4 <sup>29</sup> / <sub>32</sub>	*11 <sup>7</sup> / <sub>16</sub>	43°39'
35°	*10 <sup>15</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>8</sub>	5 <sup>7</sup> / <sub>32</sub>	*9 <sup>13</sup> / <sub>32</sub>	7 <sup>21</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>8</sub>	4 <sup>23</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>8</sub>	42°52'
34°	*10 <sup>3</sup> / <sub>4</sub>	5 <sup>29</sup> / <sub>32</sub>	5 <sup>11</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>16</sub>	7 <sup>15</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>32</sub>	4 <sup>25</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>8</sub>	*10 <sup>7</sup> / <sub>8</sub>	42°08'
33°	*11 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>16</sub>	5 <sup>15</sup> / <sub>32</sub>	*8 <sup>3</sup> / <sub>4</sub>	8 <sup>1</sup> / <sub>4</sub>	11 <sup>3</sup> / <sub>16</sub>	4 <sup>27</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>8</sub>	*10 <sup>19</sup> / <sub>32</sub>	41°24'
32°	*11 <sup>5</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>2</sub>	5 <sup>19</sup> / <sub>32</sub>	*8 <sup>3</sup> / <sub>8</sub>	8 <sup>9</sup> / <sub>16</sub>	11 <sup>11</sup> / <sub>32</sub>	4 <sup>29</sup> / <sub>32</sub>	5 <sup>29</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>16</sub>	40°40'
31°	*11 <sup>2</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>8</sub>	5 <sup>3</sup> / <sub>4</sub>	*8 <sup>1</sup> / <sub>16</sub>	8 <sup>15</sup> / <sub>16</sub>	11 <sup>15</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>16</sub>	39°57'
30°	12	7 <sup>3</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>8</sub>	*7 <sup>3</sup> / <sub>4</sub>	9 <sup>5</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>32</sub>	*9 <sup>13</sup> / <sub>16</sub>	39°14'
29°	11 <sup>5</sup> / <sub>8</sub>	7 <sup>9</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	*7 <sup>7</sup> / <sub>16</sub>	9 <sup>21</sup> / <sub>32</sub>	11 <sup>23</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>4</sub>	*9 <sup>9</sup> / <sub>16</sub>	38°33'
28°	10 <sup>9</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>8</sub>	10 <sup>3</sup> / <sub>32</sub>	11 <sup>13</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>32</sub>	*9 <sup>5</sup> / <sub>16</sub>	37°51'
27°	10 <sup>29</sup> / <sub>32</sub>	8 <sup>13</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>8</sub>	*6 <sup>27</sup> / <sub>32</sub>	10 <sup>17</sup> / <sub>32</sub>	11 <sup>29</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>32</sub>	7 <sup>13</sup> / <sub>32</sub>	*9 <sup>3</sup> / <sub>32</sub>	37°10'
26°	10 <sup>17</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>8</sub>	6 <sup>9</sup> / <sub>16</sub>	*6 <sup>9</sup> / <sub>16</sub>	11	11 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>4</sub>	7 <sup>25</sup> / <sub>32</sub>	*8 <sup>7</sup> / <sub>8</sub>	36°30'
25°	10 <sup>5</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>4</sub>	*6 <sup>1</sup> / <sub>4</sub>	11 <sup>1</sup> / <sub>2</sub>	12	5 <sup>5</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>8</sub>	*8 <sup>21</sup> / <sub>32</sub>	35°51'
24°	9 <sup>25</sup> / <sub>32</sub>	9 <sup>27</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>16</sub>	*6	*11 <sup>15</sup> / <sub>16</sub>	12	5 <sup>3</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>2</sub>	*8 <sup>15</sup> / <sub>32</sub>	35°13'
23°	9 <sup>3</sup> / <sub>8</sub>	10 <sup>13</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>32</sub>	*5 <sup>11</sup> / <sub>16</sub>	*11 <sup>3</sup> / <sub>8</sub>	11 <sup>31</sup> / <sub>32</sub>	5 <sup>13</sup> / <sub>32</sub>	8 <sup>29</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>4</sub>	34°36'
22°	9	11	7 <sup>13</sup> / <sub>32</sub>	*5 <sup>7</sup> / <sub>16</sub>	*10 <sup>27</sup> / <sub>32</sub>	11 <sup>15</sup> / <sub>16</sub>	5 <sup>15</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>8</sub>	*8 <sup>1</sup> / <sub>16</sub>	34°00'
21°	8 <sup>5</sup> / <sub>8</sub>	11 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	*5 <sup>5</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>16</sub>	11 <sup>27</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	9 <sup>27</sup> / <sub>32</sub>	*7 <sup>29</sup> / <sub>32</sub>	33°23'
20°	8 <sup>7</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>8</sub>	8	*4 <sup>7</sup> / <sub>8</sub>	*9 <sup>25</sup> / <sub>32</sub>	11 <sup>3</sup> / <sub>4</sub>	5 <sup>9</sup> / <sub>16</sub>	10 <sup>5</sup> / <sub>16</sub>	*7 <sup>3</sup> / <sub>4</sub>	32°48'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

5" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*5 <sup>5</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>32</sub>	1 <sup>19</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>32</sub>	1 <sup>19</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	4	71°35'
69°	*5 <sup>3</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>4</sub>	1 <sup>25</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>	70°40'
68°	*5 <sup>1</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>4</sub>	4 <sup>15</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>16</sub>	69°45'
67°	*5 <sup>7</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	68°50'
66°	*5 <sup>1</sup> / <sub>2</sub>	2 <sup>5</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	4 <sup>25</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>8</sub>	67°56'
65°	*5 <sup>17</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	5	1 <sup>3</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	67°02'
64°	*5 <sup>9</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	66°06'
63°	*5 <sup>5</sup> / <sub>8</sub>	1	2 <sup>7</sup> / <sub>8</sub>	5 <sup>2</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>8</sub>	3 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	65°12'
62°	*5 <sup>21</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>8</sub>	2 <sup>7</sup> / <sub>16</sub>	5 <sup>2</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>16</sub>	5 <sup>2</sup> / <sub>32</sub>	64°17'
61°	*5 <sup>23</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>	6	63°24'
60°	*5 <sup>25</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>8</sub>	6 <sup>13</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>4</sub>	62°30'
59°	*5 <sup>27</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	2 <sup>25</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>2</sub>	61°34'
58°	*5 <sup>29</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	6 <sup>15</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>8</sub>	6 <sup>17</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>2</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>2</sup> / <sub>32</sub>	60°42'
57°	*5 <sup>3</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	2 <sup>19</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	3	6 <sup>3</sup> / <sub>4</sub>	2 <sup>7</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	59°48'
56°	*6 <sup>1</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	2 <sup>2</sup> / <sub>32</sub>	7 <sup>15</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	7	2 <sup>5</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>4</sub>	58°54'
55°	*6 <sup>3</sup> / <sub>32</sub>	1 <sup>23</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	7 <sup>3</sup> / <sub>4</sub>	3 <sup>7</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>32</sub>	2 <sup>23</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>2</sub>	58°02'
54°	*6 <sup>5</sup> / <sub>16</sub>	1 <sup>27</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>16</sub>	2 <sup>25</sup> / <sub>32</sub>	1 <sup>25</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>4</sub>	57°08'
53°	*6 <sup>7</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>8</sub>	8 <sup>11</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	2 <sup>27</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>8</sub>	8	56°14'
52°	*6 <sup>9</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	8 <sup>2</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	7 <sup>15</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>16</sub>	2	8 <sup>3</sup> / <sub>32</sub>	55°21'
51°	*6 <sup>11</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>32</sub>	3 <sup>23</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>16</sub>	3	2 <sup>3</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>16</sub>	54°27'
50°	*6 <sup>13</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	9 <sup>9</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>8</sub>	8 <sup>13</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>32</sub>	8 <sup>2</sup> / <sub>32</sub>	53°36'
49°	*6 <sup>15</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>16</sub>	9 <sup>5</sup> / <sub>8</sub>	4	8 <sup>2</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>8</sub>	2 <sup>11</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>8</sub>	53°41'
48°	*6 <sup>17</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>32</sub>	9 <sup>13</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	8 <sup>29</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>16</sub>	2 <sup>15</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	51°50'
47°	*6 <sup>19</sup> / <sub>16</sub>	2 <sup>11</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>16</sub>	9 <sup>9</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>4</sub>	2 <sup>9</sup>	9 <sup>2</sup> / <sub>32</sub>	50°58'
46°	*6 <sup>21</sup> / <sub>16</sub>	2 <sup>13</sup> / <sub>16</sub>	3 <sup>17</sup> / <sub>32</sub>	10 <sup>11</sup> / <sub>16</sub>	4 <sup>13</sup> / <sub>16</sub>	9 <sup>13</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>32</sub>	50°06'
45°	*7 <sup>1</sup> / <sub>16</sub>	3	3 <sup>1</sup> / <sub>2</sub>	11 <sup>1</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>8</sub>	9 <sup>2</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	49°12'
44°	*7 <sup>3</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>16</sub>	11 <sup>7</sup> / <sub>16</sub>	4 <sup>25</sup> / <sub>32</sub>	9 <sup>29</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	10 <sup>2</sup> / <sub>32</sub>	48°22'
43°	*7 <sup>5</sup> / <sub>16</sub>	3 <sup>9</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>32</sub>	11 <sup>1</sup> / <sub>8</sub>	4 <sup>3</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>32</sub>	3 <sup>17</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>32</sub>	47°30'
42°	*7 <sup>7</sup> / <sub>16</sub>	3 <sup>13</sup> / <sub>32</sub>	3 <sup>17</sup> / <sub>32</sub>	*11 <sup>23</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>8</sub>	10 <sup>13</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>32</sub>	11 <sup>5</sup> / <sub>16</sub>	46°40'
41°	*7 <sup>9</sup> / <sub>16</sub>	3 <sup>17</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	*11 <sup>5</sup> / <sub>16</sub>	5 <sup>5</sup> / <sub>16</sub>	10 <sup>17</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>8</sub>	3 <sup>17</sup> / <sub>32</sub>	11 <sup>2</sup> / <sub>32</sub>	45°50'
40°	*7 <sup>11</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>8</sub>	3 <sup>7</sup> / <sub>8</sub>	*10 <sup>29</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	10 <sup>29</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	12	45°00'
39°	*7 <sup>13</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	3 <sup>11</sup> / <sub>32</sub>	*10 <sup>17</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>16</sub>	11 <sup>5</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	3 <sup>7</sup> / <sub>8</sub>	*11 <sup>2</sup> / <sub>32</sub>	44°10'
38°	*8 <sup>1</sup> / <sub>16</sub>	4 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	*10 <sup>5</sup> / <sub>32</sub>	5 <sup>29</sup> / <sub>32</sub>	11 <sup>13</sup> / <sub>32</sub>	3 <sup>13</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>16</sub>	*11 <sup>5</sup> / <sub>16</sub>	43°20'
37°	*8 <sup>3</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>8</sub>	*9 <sup>13</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>8</sub>	11 <sup>2</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>4</sub>	*11	42°30'
36°	*8 <sup>5</sup> / <sub>16</sub>	4 <sup>13</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	*9 <sup>15</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>32</sub>	11 <sup>29</sup> / <sub>32</sub>	3 <sup>15</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>16</sub>	41°42'
35°	*8 <sup>7</sup> / <sub>16</sub>	4 <sup>17</sup> / <sub>32</sub>	4 <sup>9</sup> / <sub>16</sub>	*9 <sup>3</sup> / <sub>32</sub>	6 <sup>19</sup> / <sub>32</sub>	*11 <sup>27</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>16</sub>	*10 <sup>3</sup> / <sub>8</sub>	40°53'
34°	*8 <sup>9</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>4</sub>	4 <sup>13</sup> / <sub>32</sub>	*8 <sup>25</sup> / <sub>32</sub>	6 <sup>27</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>32</sub>	4 <sup>29</sup> / <sub>32</sub>	*10 <sup>3</sup> / <sub>32</sub>	40°04'
33°	*9 <sup>1</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>2</sub>	*8 <sup>7</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>32</sub>	*11 <sup>13</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>16</sub>	39°16'
32°	*9 <sup>3</sup> / <sub>32</sub>	5 <sup>9</sup> / <sub>32</sub>	4 <sup>19</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>8</sub>	7 <sup>7</sup> / <sub>8</sub>	*11 <sup>3</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	5 <sup>13</sup> / <sub>32</sub>	*9 <sup>9</sup> / <sub>16</sub>	38°30'
31°	*9 <sup>5</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>16</sub>	4 <sup>23</sup> / <sub>32</sub>	*7 <sup>13</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>16</sub>	*11	4 <sup>3</sup> / <sub>16</sub>	5 <sup>2</sup> / <sub>8</sub>	*9 <sup>9</sup> / <sub>32</sub>	37°43'
30°	*10	6 <sup>5</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>2</sub>	8	*10 <sup>27</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>4</sub>	5 <sup>15</sup> / <sub>16</sub>	*9 <sup>1</sup> / <sub>32</sub>	36°56'
29°	*10 <sup>1</sup> / <sub>32</sub>	6 <sup>11</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>16</sub>	*7 <sup>7</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>16</sub>	*10 <sup>1</sup> / <sub>16</sub>	4 <sup>9</sup> / <sub>32</sub>	6 <sup>7</sup> / <sub>32</sub>	*8 <sup>25</sup> / <sub>32</sub>	36°10'
28°	*10 <sup>3</sup> / <sub>32</sub>	7	5 <sup>1</sup> / <sub>16</sub>	*6 <sup>29</sup> / <sub>32</sub>	8 <sup>1</sup> / <sub>16</sub>	*10 <sup>17</sup> / <sub>32</sub>	4 <sup>1</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>2</sub>	*8 <sup>1</sup> / <sub>32</sub>	35°26'
27°	*11	7 <sup>3</sup> / <sub>8</sub>	5 <sup>5</sup> / <sub>32</sub>	*6 <sup>5</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>16</sub>	*10 <sup>13</sup> / <sub>32</sub>	4 <sup>3</sup> / <sub>8</sub>	6 <sup>27</sup> / <sub>32</sub>	*8 <sup>9</sup> / <sub>32</sub>	34°40'
26°	*11 <sup>1</sup> / <sub>8</sub>	7 <sup>13</sup> / <sub>16</sub>	5 <sup>9</sup> / <sub>32</sub>	*6 <sup>3</sup> / <sub>8</sub>	9 <sup>15</sup> / <sub>32</sub>	*10 <sup>5</sup> / <sub>16</sub>	4 <sup>13</sup> / <sub>32</sub>	7 <sup>5</sup> / <sub>32</sub>	*8 <sup>1</sup> / <sub>16</sub>	33°57'
25°	*11 <sup>3</sup> / <sub>32</sub>	8 <sup>9</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>16</sub>	*6 <sup>1</sup> / <sub>16</sub>	9 <sup>29</sup> / <sub>32</sub>	*10 <sup>3</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>32</sub>	7 <sup>17</sup> / <sub>32</sub>	*7 <sup>27</sup> / <sub>32</sub>	33°13'
24°	11 <sup>7</sup> / <sub>32</sub>	8 <sup>13</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	*5 <sup>13</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>8</sub>	4 <sup>1</sup> / <sub>2</sub>	7 <sup>29</sup> / <sub>32</sub>	*7 <sup>5</sup> / <sub>8</sub>	32°32'
23°	11 <sup>11</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>4</sub>	5 <sup>23</sup> / <sub>32</sub>	*5 <sup>17</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	8 <sup>5</sup> / <sub>16</sub>	*7 <sup>7</sup> / <sub>16</sub>	31°50'
22°	10 <sup>3</sup> / <sub>4</sub>	9 <sup>5</sup> / <sub>4</sub>	5 <sup>29</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>4</sub>	11 <sup>7</sup> / <sub>16</sub>	*10	4 <sup>19</sup> / <sub>32</sub>	8 <sup>25</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>4</sub>	31°10'
21°	10 <sup>7</sup> / <sub>16</sub>	10 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>32</sub>	*5	*11 <sup>15</sup> / <sub>16</sub>	*10	4 <sup>5</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>4</sub>	*7 <sup>1</sup> / <sub>16</sub>	30°29'
20°	9 <sup>27</sup> / <sub>32</sub>	11	6 <sup>5</sup> / <sub>16</sub>	*4 <sup>23</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>32</sub>	*10	4 <sup>2</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>4</sub>	*6 <sup>7</sup> / <sub>8</sub>	29°50'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

4" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*4 1/4	7/16	1 5/16	4 5/32	1 3/8	4 3/32	1 5/16	7/16	4 1/8	71°04'
69°	*4 9/32	1/2	1 3/8	4 3/8	1 15/32	4 1/16	1 3/8	1/2	4 1 1/32	70°06'
68°	*4 5/16	1 7/32	1 7/16	4 1 9/32	1 7/32	4 1 7/32	1 7/16	1 7/32	4 7/16	69°10'
67°	*4 3/8	1 9/32	1 1/2	4 2 7/32	1 5/8	4 3/4	1 1/2	1 9/32	4 2 5/32	68°14'
66°	*4 1 3/82	2 1/32	1 9/16	5 1/16	1 11/16	4 3 1/32	1 9/16	2 1/32	5 3/32	67°17'
65°	*4 1 3/32	2 3/32	1 5/8	5 5/16	1 25/32	5 3/16	1 5/8	1 1/16	5 1/4	66°22'
64°	*4 7/16	3/4	1 11/16	5 1 7/32	1 27/32	5 1 3/32	1 11/16	3/4	5 1/2	65°24'
63°	*4 1/2	2 7/32	1 3/4	5 2 5/32	1 5/16	5 2 1/32	1 3/4	1 3/16	5 2 3/32	64°28'
62°	*4 1 7/32	7/8	1 13/16	6 1/32	2 1/32	5 2 9/32	1 13/16	7/8	5 3 1/32	63°30'
61°	*4 1 9/32	1 5/16	1 7/8	6 5/16	2 3/32	6 1/8	1 7/8	1 5/16	6 3/32	62°36'
60°	*4 5/8	1 1/32	1 5/16	6 9/16	2 3/16	6 3/8	1 2 9/32	1 1/32	6 1 5/32	61°41'
59°	*4 1 1/16	1 3/32	2	6 2 7/32	2 9/32	6 3/4	1 3 1/32	1 3/32	6 2 3/32	60°44'
58°	*4 3/4	1 3/16	2 1/16	7 1/8	2 7/8	6 2 7/32	2 1/32	1 5/32	6 2 1/32	59°48'
57°	*4 2 5/32	1 1/4	2 1/8	7 3/8	2 5/32	7 3/32	2 3/32	1 1/4	7 3/32	58°52'
56°	*4 2 7/32	1 1 1/32	2 5/32	7 1 1/16	2 9/16	7 1 1/32	2 5/32	1 5/16	7 1/2	57°57'
55°	*4 7/8	1 7/16	2 7/32	7 2 1/32	2 2 1/32	7 1 9/32	2 7/32	1 13/32	7 2 5/32	57°01'
54°	*4 3 1/32	1 1 7/32	2 9/32	8 3/32	2 7/4	7 7/8	2 9/32	1 1/2	8 1/16	56°05'
53°	*5	1 5/8	2 1 1/32	8 1 9/32	2 7/8	8 1/8	2 5/16	1 1 9/32	8 1 9/32	55°09'
52°	*5 1/16	1 3/4	2 1 3/32	8 2 9/32	2 3 1/32	8 1 3/32	2 3/8	1 1 1/16	8 3/8	54°14'
51°	*5 5/32	1 2 7/32	2 1 5/32	9 1/4	3 1/16	8 2 5/32	2 7/16	1 2 5/32	8 1 5/16	53°17'
50°	*5 7/32	1 5/16	2 1 7/32	9 9/16	3 3/16	8 1 5/16	2 1/2	1 2 9/32	9 7/32	52°26'
49°	*5 5/16	2 1/16	2 1 9/32	9 2 9/32	3 9/32	9 7/32	2 9/16	2	9 1 7/32	51°28'
48°	*5 1 3/32	2 5/32	2 5/8	10 1/4	3 1 3/32	9 1/2	2 1 9/32	2 1/8	9 2 7/32	50°34'
47°	*5 1/2	2 9/32	2 1 1/16	10 5/8	3 1 7/32	9 5/32	2 2 1/32	2 7/32	10 1/16	49°39'
46°	*5 1 9/32	2 1 3/32	2 3/4	11	3 2 1/32	10 1/16	2 2 3/32	2 1 1/32	10 1/2	48°45'
45°	*5 2 1/32	2 1 7/32	2 1 3/16	11 3/8	3 2 5/32	10 1 1/32	2 3/4	2 1 5/32	10 2 7/32	47°52'
44°	*5 2 5/32	2 3 1/32	2 7/8	11 1 3/16	3 1 5/16	10 5/8	2 1 3/16	2 1 9/32	11 3/16	46°57'
43°	*5 7/8	2 1 3/16	2 1 5/16	*11 2 5/32	4 1/16	10 1 5/16	2 2 7/32	2 3/4	11 9/16	46°03'
42°	*6	2 1 5/16	3	*11 3/8	4 7/32	11 1/4	2 2 9/32	2 7/8	11 1 5/16	45°09'
41°	*6 1/8	3 3/32	3 1/32	*11	4 3/8	11 9/16	2 1 5/16	3 3/32	*11 1 1/16	44°18'
40°	*6 7/32	3 9/32	3 3/32	*10 5/8	4 1 7/32	11 7/8	3	3 3/16	*11 1 1/32	43°24'
39°	*6 3/8	3 1 5/32	3 5/32	*10 7/32	4 1 1/16	*11 1 3/16	3 1/32	3 1 3/32	*11	42°32'
38°	*6 1/2	3 5/8	3 7/8	*9 7/8	4 2 7/32	*11 1/2	3 3/32	3 1/2	*10 2 1/32	41°38'
37°	*6 1 9/32	3 1 3/16	3 9/32	*9 1 7/32	5 1/32	*11 3/16	3 1/8	3 1 1/16	*10 1 1/32	40°46'
36°	*6 1 3/16	4	3 1 1/32	*9 3/16	5 7/32	*10 1 5/16	3 1/16	3 7/8	*10 7/32	39°53'
35°	*6 3 1/32	4 7/32	3 1 3/32	*8 2 6/32	5 1 3/32	*10 2 1/32	3 7/32	4 1/16	*9 2 3/32	39°00'
34°	*7 5/32	4 7/16	3 1 5/32	*8 1 7/32	5 5/8	*10 1 3/32	3 1/4	4 1/4	*9 7/16	38°08'
33°	*7 1 1/32	4 2 1/32	3 1 7/32	*8 3/16	5 2 7/32	*10 5/32	3 5/16	4 1 5/32	*9 7/8	37°18'
32°	*7 9/16	4 2 9/32	3 1 9/32	*7 2 9/32	6 1/16	*9 1 5/16	3 1 1/32	4 1 1/16	*8 2 7/32	36°27'
31°	*7 2 5/32	5 1/8	3 1 1/16	*7 1 9/32	6 5/16	*9 2 3/32	3 3/8	4 2 9/32	*8 1 9/32	35°36'
30°	*8	5 1 3/32	3 3/4	*7 5/16	6 9/16	*9 1/2	3 1 3/32	5 5/32	*8 5/16	34°46'
29°	*8 1/4	5 1 1/16	3 2 7/32	*7 1/32	6 2 7/32	*9 5/16	3 7/16	5 1 3/32	*8 1/16	33°56'
28°	*8 1/2	5 3 1/32	3 1 5/16	*6 3/4	7 1/8	*9 1/8	3 1/2	5 1 1/16	*7 1 3/16	33°08'
27°	*8 1 3/16	6 9/32	4	*6 7/16	7 7/16	*8 1 5/16	3 1 7/32	5 3 1/32	*7 1 9/32	32°19'
26°	*9 1/8	6 5/8	4 1/16	*6 5/16	7 3/4	*8 2 5/32	3 9/16	6 3/32	*7 1 1/32	31°30'
25°	*9 1 5/32	7	4 3/16	*5 2 9/32	8 1/8	*8 5/8	3 1 9/32	6 5/8	*7 7/8	30°42'
24°	*9 1 3/16	7 1 1/32	4 1/4	*5 5/8	8 1 7/32	*8 1 5/32	3 5/8	6 3 1/32	*6 2 9/32	29°56'
23°	*10 7/32	7 3/4	4 3/8	*5 5/8	8 1 5/16	*8 1 1/32	3 2 1/32	7 1 1/32	*6 1 1/16	29°10'
22°	*10 2 1/32	8 1/4	4 1/2	*5 1/8	9 1 3/32	*8 1/4	3 1 1/16	7 3/4	*6 1 5/32	28°25'
21°	*11 3/32	8 3/4	4 5/8	*4 2 7/32	9 7/8	*8 3/32	3 2 3/32	8 5/16	*6 3/32	27°40'
20°	*11 1 1/16	9 9/32	4 2 3/32	*4 1 9/32	10 7/16	*8 3/32	3 3/4	8 2 1/32	*6 3/32	26°57'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

3" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*3 <sup>3</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>8</sub>	1	4 <sup>1</sup> / <sub>4</sub>	1 <sup>1</sup> / <sub>16</sub>	4 <sup>7</sup> / <sub>32</sub>	1	1 <sup>1</sup> / <sub>32</sub>	4 <sup>7</sup> / <sub>32</sub>	70°37'
69°	*3 <sup>7</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>	4 <sup>7</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>32</sub>	3 <sup>8</sup> / <sub>8</sub>	4 <sup>15</sup> / <sub>32</sub>	69°39'
68°	*3 <sup>7</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>8</sub>	4 <sup>23</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	4 <sup>11</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>32</sub>	7 <sup>1</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	68°41'
67°	*3 <sup>1</sup> / <sub>4</sub>	1 <sup>5</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>	4 <sup>15</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>32</sub>	4 <sup>2</sup> / <sub>32</sub>	67°43'
66°	*3 <sup>9</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	5 <sup>3</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>8</sub>	1 <sup>3</sup> / <sub>16</sub>	1 <sup>2</sup> / <sub>2</sub>	5 <sup>3</sup> / <sub>32</sub>	66°46'
65°	*3 <sup>5</sup> / <sub>16</sub>	9 <sup>1</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>4</sub>	5 <sup>7</sup> / <sub>16</sub>	1 <sup>11</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>4</sub>	9 <sup>1</sup> / <sub>16</sub>	5 <sup>13</sup> / <sub>32</sub>	65°48'
64°	*3 <sup>11</sup> / <sub>32</sub>	5 <sup>8</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>32</sub>	5 <sup>11</sup> / <sub>16</sub>	1 <sup>13</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	1 <sup>9</sup> / <sub>32</sub>	5 <sup>8</sup> / <sub>8</sub>	64°49'
63°	*3 <sup>3</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>32</sub>	5 <sup>15</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>	5 <sup>2</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	5 <sup>7</sup> / <sub>8</sub>	63°52'
62°	*3 <sup>13</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>8</sub>	6 <sup>3</sup> / <sub>16</sub>	1 <sup>17</sup> / <sub>32</sub>	6 <sup>3</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>8</sub>	62°53'
61°	*3 <sup>7</sup> / <sub>16</sub>	3 <sup>4</sup> / <sub>4</sub>	1 <sup>7</sup> / <sub>16</sub>	6 <sup>15</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	6 <sup>1</sup> / <sub>32</sub>	1 <sup>7</sup> / <sub>16</sub>	3 <sup>4</sup> / <sub>4</sub>	6 <sup>3</sup> / <sub>8</sub>	61°56'
60°	*3 <sup>15</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>32</sub>	6 <sup>23</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>16</sub>	6 <sup>1</sup> / <sub>32</sub>	1 <sup>15</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	6 <sup>2</sup> / <sub>32</sub>	61°00'
59°	*3 <sup>1</sup> / <sub>2</sub>	7 <sup>8</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>2</sub>	7	1 <sup>3</sup> / <sub>4</sub>	6 <sup>2</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	7 <sup>8</sup> / <sub>8</sub>	6 <sup>2</sup> / <sub>32</sub>	60°00'
58°	*3 <sup>17</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>16</sub>	1 <sup>9</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>8</sub>	1 <sup>9</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	59°03'
57°	*3 <sup>9</sup> / <sub>16</sub>	1	1 <sup>13</sup> / <sub>32</sub>	7 <sup>3</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>	7 <sup>3</sup> / <sub>8</sub>	1 <sup>13</sup> / <sub>32</sub>	1	7 <sup>15</sup> / <sub>32</sub>	58°05'
56°	*3 <sup>5</sup> / <sub>8</sub>	1 <sup>1</sup> / <sub>16</sub>	1 <sup>2</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>32</sub>	7 <sup>2</sup> / <sub>32</sub>	1 <sup>2</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>16</sub>	7 <sup>3</sup> / <sub>4</sub>	57°08'
55°	*3 <sup>2</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>8</sub>	1 <sup>11</sup> / <sub>16</sub>	8 <sup>5</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>32</sub>	7 <sup>15</sup> / <sub>16</sub>	1 <sup>11</sup> / <sub>16</sub>	1 <sup>1</sup> / <sub>8</sub>	8 <sup>1</sup> / <sub>32</sub>	56°11'
54°	*3 <sup>23</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	1 <sup>3</sup> / <sub>4</sub>	8 <sup>15</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>32</sub>	8 <sup>7</sup> / <sub>32</sub>	1 <sup>23</sup> / <sub>32</sub>	1 <sup>3</sup> / <sub>16</sub>	8 <sup>11</sup> / <sub>32</sub>	55°13'
53°	*3 <sup>3</sup> / <sub>4</sub>	1 <sup>9</sup> / <sub>32</sub>	1 <sup>25</sup> / <sub>32</sub>	8 <sup>3</sup> / <sub>4</sub>	2 <sup>1</sup> / <sub>16</sub>	8 <sup>1</sup> / <sub>2</sub>	1 <sup>25</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>4</sub>	8 <sup>5</sup> / <sub>8</sub>	54°14'
52°	*3 <sup>13</sup> / <sub>16</sub>	1 <sup>11</sup> / <sub>32</sub>	1 <sup>27</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	8 <sup>25</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	1 <sup>11</sup> / <sub>32</sub>	8 <sup>15</sup> / <sub>16</sub>	53°18'
51°	*3 <sup>7</sup> / <sub>8</sub>	1 <sup>7</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>	9 <sup>1</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	9 <sup>3</sup> / <sub>32</sub>	1 <sup>27</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>4</sub>	52°21'
50°	*3 <sup>29</sup> / <sub>32</sub>	1 <sup>17</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	9 <sup>25</sup> / <sub>32</sub>	2 <sup>7</sup> / <sub>16</sub>	9 <sup>3</sup> / <sub>8</sub>	1 <sup>29</sup> / <sub>32</sub>	1 <sup>1</sup> / <sub>2</sub>	9 <sup>9</sup> / <sub>16</sub>	51°24'
49°	*3 <sup>13</sup> / <sub>32</sub>	1 <sup>5</sup> / <sub>8</sub>	1 <sup>15</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>8</sub>	2 <sup>17</sup> / <sub>32</sub>	9 <sup>1</sup> / <sub>16</sub>	1 <sup>15</sup> / <sub>16</sub>	1 <sup>13</sup> / <sub>32</sub>	9 <sup>29</sup> / <sub>32</sub>	50°27'
48°	*4 <sup>1</sup> / <sub>32</sub>	1 <sup>23</sup> / <sub>32</sub>	2	10 <sup>15</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	10	1 <sup>3</sup> / <sub>32</sub>	1 <sup>11</sup> / <sub>16</sub>	10 <sup>1</sup> / <sub>4</sub>	49°31'
47°	*4 <sup>3</sup> / <sub>32</sub>	1 <sup>13</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	10 <sup>7</sup> / <sub>8</sub>	2 <sup>23</sup> / <sub>32</sub>	10 <sup>5</sup> / <sub>16</sub>	2	1 <sup>25</sup> / <sub>32</sub>	10 <sup>1</sup> / <sub>32</sub>	48°35'
46°	*4 <sup>5</sup> / <sub>32</sub>	1 <sup>29</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	11 <sup>1</sup> / <sub>4</sub>	2 <sup>13</sup> / <sub>16</sub>	10 <sup>21</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	1 <sup>7</sup> / <sub>8</sub>	10 <sup>15</sup> / <sub>16</sub>	47°38'
45°	*4 <sup>1</sup> / <sub>4</sub>	2	2 <sup>1</sup> / <sub>8</sub>	11 <sup>2</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	11	2 <sup>3</sup> / <sub>32</sub>	1 <sup>31</sup> / <sub>32</sub>	11 <sup>5</sup> / <sub>16</sub>	46°40'
44°	*4 <sup>5</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>16</sub>	3	11 <sup>5</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>16</sub>	11 <sup>23</sup> / <sub>32</sub>	45°44'
43°	*4 <sup>13</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>16</sub>	*11 <sup>1</sup> / <sub>2</sub>	3 <sup>1</sup> / <sub>8</sub>	11 <sup>2</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>32</sub>	*11 <sup>29</sup> / <sub>32</sub>	44°48'
42°	*4 <sup>15</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>4</sub>	*11 <sup>1</sup> / <sub>8</sub>	3 <sup>1</sup> / <sub>4</sub>	12	2 <sup>7</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>32</sub>	*11 <sup>17</sup> / <sub>32</sub>	43°52'
41°	*4 <sup>9</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>16</sub>	2 <sup>9</sup> / <sub>32</sub>	*10 <sup>3</sup> / <sub>4</sub>	3 <sup>3</sup> / <sub>8</sub>	*11 <sup>5</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>4</sub>	2 <sup>13</sup> / <sub>32</sub>	*11 <sup>5</sup> / <sub>32</sub>	42°56'
40°	*4 <sup>2</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>16</sub>	*10 <sup>3</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>32</sub>	*11 <sup>1</sup> / <sub>4</sub>	2 <sup>9</sup> / <sub>32</sub>	2 <sup>17</sup> / <sub>32</sub>	*10 <sup>13</sup> / <sub>16</sub>	42°00'
39°	*4 <sup>3</sup> / <sub>4</sub>	2 <sup>23</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	*10 <sup>1</sup> / <sub>32</sub>	3 <sup>19</sup> / <sub>32</sub>	*10 <sup>7</sup> / <sub>8</sub>	2 <sup>5</sup> / <sub>16</sub>	2 <sup>23</sup> / <sub>32</sub>	*10 <sup>15</sup> / <sub>32</sub>	41°06'
38°	*4 <sup>7</sup> / <sub>8</sub>	2 <sup>27</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>16</sub>	3 <sup>3</sup> / <sub>4</sub>	*10 <sup>9</sup> / <sub>16</sub>	2 <sup>1</sup> / <sub>32</sub>	2 <sup>25</sup> / <sub>32</sub>	*10 <sup>1</sup> / <sub>8</sub>	40°10'
37°	*5	3	2 <sup>1</sup> / <sub>16</sub>	*9 <sup>5</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>8</sub>	*10 <sup>9</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>8</sub>	2 <sup>15</sup> / <sub>16</sub>	*9 <sup>13</sup> / <sub>16</sub>	39°14'
36°	*5	3 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>2</sub>	*9	4	*10	2 <sup>13</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>16</sub>	*9 <sup>15</sup> / <sub>32</sub>	38°17'
35°	*5 <sup>7</sup> / <sub>32</sub>	3 <sup>5</sup> / <sub>16</sub>	2 <sup>17</sup> / <sub>32</sub>	*8 <sup>2</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>32</sub>	*9 <sup>11</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>16</sub>	3 <sup>7</sup> / <sub>32</sub>	*9 <sup>5</sup> / <sub>32</sub>	37°22'
34°	*5 <sup>3</sup> / <sub>8</sub>	3 <sup>15</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	*8 <sup>1</sup> / <sub>32</sub>	4 <sup>5</sup> / <sub>16</sub>	*9 <sup>13</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>8</sub>	*8 <sup>7</sup> / <sub>8</sub>	36°28'
33°	*5 <sup>1</sup> / <sub>2</sub>	3 <sup>2</sup> / <sub>32</sub>	2 <sup>5</sup> / <sub>8</sub>	*8 <sup>1</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>32</sub>	*9 <sup>1</sup> / <sub>8</sub>	2 <sup>1</sup> / <sub>2</sub>	3 <sup>9</sup> / <sub>16</sub>	*8 <sup>9</sup> / <sub>16</sub>	35°33'
32°	*5 <sup>19</sup> / <sub>32</sub>	3 <sup>2</sup> / <sub>32</sub>	2 <sup>2</sup> / <sub>32</sub>	*7 <sup>3</sup> / <sub>4</sub>	4 <sup>21</sup> / <sub>32</sub>	*8 <sup>7</sup> / <sub>8</sub>	2 <sup>17</sup> / <sub>32</sub>	3 <sup>3</sup> / <sub>4</sub>	*8 <sup>3</sup> / <sub>32</sub>	34°39'
31°	*5 <sup>13</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>32</sub>	2 <sup>23</sup> / <sub>32</sub>	*7 <sup>7</sup> / <sub>16</sub>	4 <sup>27</sup> / <sub>32</sub>	*8 <sup>5</sup> / <sub>8</sub>	2 <sup>9</sup> / <sub>16</sub>	3 <sup>15</sup> / <sub>16</sub>	*8 <sup>1</sup> / <sub>32</sub>	33°45'
30°	*6	4 <sup>1</sup> / <sub>4</sub>	2 <sup>3</sup> / <sub>4</sub>	*7 <sup>5</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>32</sub>	*8 <sup>13</sup> / <sub>32</sub>	2 <sup>9</sup> / <sub>16</sub>	4 <sup>1</sup> / <sub>8</sub>	*7 <sup>3</sup> / <sub>4</sub>	32°52'
29°	*6 <sup>3</sup> / <sub>16</sub>	4 <sup>15</sup> / <sub>32</sub>	2 <sup>13</sup> / <sub>16</sub>	*6 <sup>7</sup> / <sub>8</sub>	5 <sup>1</sup> / <sub>4</sub>	*8 <sup>5</sup> / <sub>32</sub>	2 <sup>19</sup> / <sub>32</sub>	4 <sup>11</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>2</sub>	31°59'
28°	*6 <sup>3</sup> / <sub>8</sub>	4 <sup>11</sup> / <sub>16</sub>	2 <sup>27</sup> / <sub>32</sub>	*6 <sup>1</sup> / <sub>932</sub>	5 <sup>1</sup> / <sub>2</sub>	*7 <sup>15</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>8</sub>	4 <sup>9</sup> / <sub>16</sub>	*7 <sup>7</sup> / <sub>32</sub>	31°05'
27°	*6 <sup>19</sup> / <sub>32</sub>	4 <sup>15</sup> / <sub>16</sub>	2 <sup>7</sup> / <sub>8</sub>	*6 <sup>5</sup> / <sub>16</sub>	5 <sup>23</sup> / <sub>32</sub>	*7 <sup>3</sup> / <sub>4</sub>	2 <sup>23</sup> / <sub>32</sub>	4 <sup>13</sup> / <sub>16</sub>	*7	30°13'
26°	*6 <sup>13</sup> / <sub>16</sub>	5 <sup>7</sup> / <sub>32</sub>	2 <sup>15</sup> / <sub>16</sub>	*6 <sup>3</sup> / <sub>32</sub>	5 <sup>3</sup> / <sub>32</sub>	*7 <sup>17</sup> / <sub>32</sub>	2 <sup>1</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>16</sub>	*6 <sup>3</sup> / <sub>4</sub>	29°20'
25°	*7 <sup>3</sup> / <sub>32</sub>	5 <sup>1</sup> / <sub>2</sub>	3	*5 <sup>2</sup> / <sub>32</sub>	6 <sup>1</sup> / <sub>4</sub>	*7 <sup>5</sup> / <sub>16</sub>	2 <sup>23</sup> / <sub>32</sub>	5 <sup>5</sup> / <sub>16</sub>	*6 <sup>1</sup> / <sub>2</sub>	28°27'
24°	*7 <sup>3</sup> / <sub>8</sub>	5 <sup>25</sup> / <sub>32</sub>	3 <sup>1</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>2</sub>	6 <sup>17</sup> / <sub>32</sub>	*7 <sup>1</sup> / <sub>8</sub>	2 <sup>29</sup> / <sub>32</sub>	5 <sup>19</sup> / <sub>32</sub>	*6 <sup>9</sup> / <sub>32</sub>	27°37'
23°	*7 <sup>11</sup> / <sub>16</sub>	6 <sup>3</sup> / <sub>32</sub>	3 <sup>9</sup> / <sub>32</sub>	*5 <sup>1</sup> / <sub>4</sub>	6 <sup>23</sup> / <sub>32</sub>	*6 <sup>3</sup> / <sub>32</sub>	2 <sup>3</sup> / <sub>4</sub>	5 <sup>29</sup> / <sub>32</sub>	*6 <sup>1</sup> / <sub>32</sub>	26°46'
22°	*8	6 <sup>1</sup> / <sub>16</sub>	3 <sup>5</sup> / <sub>32</sub>	*5	7 <sup>3</sup> / <sub>16</sub>	*6 <sup>13</sup> / <sub>16</sub>	2 <sup>3</sup> / <sub>4</sub>	6 <sup>1</sup> / <sub>4</sub>	*5 <sup>13</sup> / <sub>16</sub>	25°55'
21°	*8 <sup>3</sup> / <sub>8</sub>	6 <sup>27</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	*4 <sup>3</sup> / <sub>4</sub>	7 <sup>9</sup> / <sub>16</sub>	*6 <sup>2</sup> / <sub>32</sub>	2 <sup>29</sup> / <sub>32</sub>	6 <sup>5</sup> / <sub>8</sub>	*5 <sup>5</sup> / <sub>8</sub>	25°05'
20°	*8 <sup>25</sup> / <sub>32</sub>	7 <sup>7</sup> / <sub>32</sub>	3 <sup>7</sup> / <sub>32</sub>	*4 <sup>1</sup> / <sub>2</sub>	8	*6 <sup>1</sup> / <sub>2</sub>	2 <sup>1</sup> / <sub>16</sub>	7 <sup>1</sup> / <sub>32</sub>	*5 <sup>13</sup> / <sub>32</sub>	24°15'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

2" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*2 1/8	1/4	1 1/16	4 5/16	2 3/32	4 9/32	1 1/16	1/4	4 5/16	70°16'
69°	*2 5/32	9/32	2 3/32	4 1 7/32	3/4	4 1 7/32	2 3/32	9/32	4 1 7/32	69°17'
68°	*2 5/32	9/32	3/4	4 2 5/32	2 5/32	4 5/8	3/4	9/32	4 2 5/32	68°18'
67°	*2 7/16	5/16	2 5/32	5 1/32	1 5/16	5	2 5/32	5/16	5 1/32	67°20'
66°	*2 7/16	1 1/32	1 3/16	5 9/32	7/8	5 7/32	1 3/16	1 1/32	5 9/32	66°20'
65°	*2 7/32	3/8	2 7/32	5 1 7/32	2 9/32	5 1/2	2 7/32	3/8	5 1/2	65°21'
64°	*2 7/32	1 3/32	7/8	5 2 5/32	3 1/32	5 3/4	7/8	1 3/32	5 3/4	64°22'
63°	*2 1/4	7/16	2 9/32	6 1/32	1	6	2 9/32	7/16	6	63°23'
62°	*2 7/32	1/2	1 5/16	6 9/32	1 1/32	6 1/4	1 5/16	1 5/32	6 9/32	62°23'
61°	*2 9/32	1 7/32	3 1/32	6 9/16	1 3/32	6 1/2	3 1/32	1 7/32	6 1 7/32	61°24'
60°	*2 5/16	9/16	1	6 2 7/32	1 1/8	6 2 5/32	1	9/16	6 1 3/16	60°27'
59°	*2 1 1/32	1 9/32	1 1/32	7 3/32	1 3/16	7 1/32	1 1/32	1 9/32	7 1/16	59°27'
58°	*2 3/8	2 1/32	1 1/16	7 3/8	1 7/32	7 1/16	1 1/16	5/8	7 1 1/32	58°28'
57°	*2 3/8	1 1/16	1 3/32	7 1 1/16	1 9/32	7 1 9/32	1 1/16	1 1/16	7 5/8	57°29'
56°	*2 1 3/32	3/4	1 1/8	7 3 1/32	1 1 1/32	7 7/8	1 3/32	2 3/32	7 1 5/16	56°30'
55°	*2 7/16	2 5/32	1 1/8	8 9/32	1 3/8	8 3/16	1 1/8	2 5/32	8 1/4	55°32'
54°	*2 1 5/32	2 7/32	1 5/32	8 1 9/32	1 7/16	8 1 5/32	1 5/32	1 3/16	8 9/16	54°33'
53°	*2 1/2	2 9/32	1 3/16	8 1 5/16	1 1/2	8 2 5/32	1 3/16	7/8	8 7/8	53°34'
52°	*2 1 7/32	1 5/16	1 7/32	9 1/4	1 1 7/32	9 3/32	1 7/32	1 5/16	9 1/16	52°34'
51°	*2 7/16	1	1 1/4	9 1 9/32	1 1 9/32	9 7/16	1 1/4	3 1/32	9 1/2	51°37'
50°	*2 5/8	1 1/16	1 9/32	9 1 5/16	1 2 1/32	9 3/4	1 9/32	1 1/32	9 2 7/32	50°38'
49°	*2 2 1/32	1 1/8	1 5/16	10 9/32	1 2 3/32	10 3/32	1 5/16	1 3/32	10 3/16	49°41'
48°	*2 1 1/16	1 3/16	1 1 1/32	10 5/8	1 2 5/32	10 7/16	1 5/16	1 5/32	10 1 7/32	48°42'
47°	*2 3/4	1 1/4	1 1 1/32	11 1/32	1 2 7/32	10 1 3/16	1 1 1/32	1 7/32	10 2 9/32	47°42'
46°	*2 2 5/32	1 5/16	1 3/8	11 1/16	1 2 9/32	11 5/32	1 3/8	1 9/32	11 9/32	46°43'
45°	*2 2 7/32	1 3/8	1 1 3/32	11 2 7/32	1 3 1/32	11 7/32	1 1 3/32	1 3/8	11 1 1/16	45°45'
44°	*2 7/8	1 1 5/32	1 7/16	*11 3/4	2 3/32	11 7/8	1 7/16	1 7/16	*11 2 9/32	44°46'
43°	*2 1 1/16	1 1 7/32	1 1 5/32	*11 1 1/32	2 1/8	*11 2 3/32	1 7/16	1 1/2	*11 1 7/32	43°49'
42°	*3	1 5/8	1 1/2	*10 1 5/16	2 3/16	*11 1 1/32	1 1 5/32	1 1 9/32	*11 7/8	42°50'
41°	*3 1/16	1 1 1/16	1 1/2	*10 1 9/32	2 9/32	*10 3 1/32	1 1/2	1 2 1/32	*10 3/4	41°52'
40°	*3 1/8	1 2 5/32	1 1 7/32	*10 7/32	2 1 1/32	*10 1 9/32	1 1 7/32	1 3/4	*10 1 3/32	40°55'
39°	*3 3/16	1 7/8	1 9/16	*9 7/8	2 7/16	*10 1/4	1 9/16	1 2 7/32	*10 1/16	39°58'
38°	*3 1/4	1 3 1/32	1 1 9/32	*9 1/2	2 1 7/32	*9 1 5/16	1 9/16	1 1 5/16	*9 2 3/32	39°00'
37°	*3 5/16	2 1/16	1 5/8	*9 9/32	2 5/8	*9 9/8	1 1 9/32	2 3/32	*9 9/8	38°03'
36°	*3 1 3/32	2 5/32	1 5/8	*8 2 7/32	2 2 3/32	*9 9/16	1 5/8	2 5/32	*9 1/16	37°05'
35°	*3 1/2	2 9/32	1 2 1/32	*8 1 7/32	2 1 3/16	*9	1 5/8	2 1/4	*8 3/4	36°07'
34°	*3 1 9/32	2 3/8	1 1 1/16	*8 7/32	2 1 5/16	*8 1 1/16	1 2 1/32	2 3/8	*8 7/16	35°11'
33°	*3 1 1/16	2 1/2	1 2 3/32	*7 2 9/32	3 1/32	*8 1 3/32	1 2 1/32	2 1/2	*8 5/8	34°12'
32°	*3 2 5/32	2 5/8	1 3/4	*7 5/8	3 5/32	*8 1/8	1 1 1/16	2 5/8	*7 7/8	33°14'
31°	*3 3/8	2 2 5/32	1 3/4	*7 5/16	3 9/32	*7 7/8	1 2 3/32	2 3/4	*7 1 9/32	32°17'
30°	*4	2 2 9/32	1 2 5/32	*7 3/32	3 1 3/32	*7 1 9/32	1 2 3/32	2 7/8	*7 5/16	31°19'
29°	*4 1/8	3 1/16	1 1 3/16	*6 3/4	3 9/16	*7 5/16	1 3/4	3 1/32	*7 1/32	30°21'
28°	*4 1/4	3 3/32	1 1 3/16	*6 1/2	3 2 3/32	*7 3/32	1 3/4	3 9/16	*6 2 5/32	29°25'
27°	*4 1 3/32	3 1 3/32	1 2 7/32	*6 3/32	3 7/8	*6 2 7/32	1 2 5/32	3 1 1/32	*6 1/2	28°29'
26°	*4 9/16	3 1 9/32	1 7/8	*5 1 5/16	4 3/32	*6 5/8	1 2 5/32	3 1 7/32	*6 1/4	27°32'
25°	*4 2 3/32	3 2 5/32	1 2 9/32	*5 1 1/16	4 7/32	*6 3/8	1 1 3/16	3 3/4	*6	26°37'
24°	*4 2 9/32	4	1 1 5/16	*5 7/16	4 1 3/32	*6 5/32	1 1 3/16	3 1 9/16	*5 2 5/32	25°41'
23°	*5 3/32	4 7/32	1 3 1/32	*5 3/16	4 5/8	*5 1 5/16	1 2 7/32	4 5/32	*5 1 7/32	24°47'
22°	*5 5/16	4 7/16	2	*4 1 5/16	4 7/8	*5 3/4	1 2 7/32	4 1 3/32	*5 9/32	23°51'
21°	*5 1 7/32	4 2 3/32	2	*4 1 1/16	5 1/8	*5 1 7/32	1 7/8	4 1 1/16	*5 1/16	22°58'
20°	*5 2 7/32	5 1/32	2 1/32	*4 7/16	5 1 3/32	*5 1 1/32	1 7/8	4 3 1/32	*4 7/8	22°03'

\* Angle exceeds 45°. Pitch given for complement.

# HIP & VALLEY FRAMING ANGLES

FOR ROOF SLOPE PITCH

1" HORIZONTAL TO VERTICAL 12"

ANGLE D IN PLAN	R1	R2	R3	P1	P2-C3	P3	C1	C2	C4-C5	C6
70°	*1 1/16	1/8	1 1/32	4 1 1/32	3/8	4 1 1/32	1 1/32	1/8	4 1 1/32	70°04'
69°	*1 1/16	1/8	1 1/32	4 1 9/32	3/8	4 1 9/32	1 1/32	5/32	4 1 9/32	69°03'
68°	*1 1/16	5/32	3/8	4 2 7/32	13/32	4 2 7/32	3/8	5/32	4 2 7/32	68°03'
67°	*1 3/32	5/32	3/8	5 1/16	1 5/32	5 1/16	3/8	5/32	5 1/16	67°04'
66°	*1 3/32	3/16	1 3/32	5 5/16	7/16	5 5/16	1 3/32	3/16	5 5/16	66°05'
65°	*1 3/32	3/16	1 3/32	5 9/16	1 5/32	5 9/16	1 3/32	3/16	5 9/16	65°05'
64°	*1 3/32	7/32	7/16	5 1 3/32	1 5/32	5 1 3/32	7/16	7/32	5 1 3/32	64°05'
63°	*1 7/8	7/32	7/16	6 3/32	1/2	6 1/16	7/16	7/32	6 3/32	63°05'
62°	*1 7/8	1/4	1 5/32	6 1 1/32	1 7/32	6 1 1/32	1 5/32	1/4	6 1 1/32	62°06'
61°	*1 7/8	1/4	1 5/32	6 5/8	1 7/32	6 1 9/32	1 5/32	9/32	6 5/8	61°06'
60°	*1 5/32	9/32	1/2	6 2 9/32	9/16	6 7/8	1/2	9/32	6 2 9/32	60°06'
59°	*1 5/32	5/16	1/2	7 3/16	1 9/32	7 5/32	1/2	9/16	7 5/32	59°06'
58°	*1 5/32	5/16	1 7/32	7 1 5/32	5/8	7 1/16	1 7/32	5/16	7 1 5/32	58°06'
57°	*1 3/16	1 1/32	1 7/32	7 3/4	5/8	7 3/4	1 7/32	1 1/32	7 3/4	57°06'
56°	*1 3/16	3/8	9/16	8 1/16	2 1/32	8 1/32	9/16	3/8	8 1/16	56°06'
55°	*1 7/32	1 3/32	9/16	8 3/8	1 1/16	8 1 1/32	9/16	1 3/32	8 3/8	55°07'
54°	*1 1/4	7/16	1 9/32	8 1 1/16	2 3/32	8 2 1/32	1 9/32	7/16	8 1 1/16	54°07'
53°	*1 1/4	7/16	1 9/32	9	3/4	8 3 1/32	1 9/32	1 5/32	9	53°08'
52°	*1 9/32	1 5/32	5/8	9 3/8	2 5/32	9 5/16	5/8	1 5/32	9 1 1/32	52°08'
51°	*1 9/32	1/2	5/8	9 1 1/16	1 3/16	9 5/8	5/8	1/2	9 2 1/32	51°09'
50°	*1 5/16	1 7/32	2 1/32	10 1/32	2 7/32	10	2 1/32	1 7/32	10	50°10'
49°	*1 5/16	9/16	2 1/32	10 3/8	7/8	10 1 1/32	2 1/32	9/16	10 1 1/32	49°10'
48°	*1 1 1/32	1 9/32	1 1/16	10 5/4	2 9/32	10 2 3/32	2 1/32	1 9/32	10 2 3/32	48°11'
47°	*1 3/8	5/8	1 1/16	11 1/8	1 5/16	11 1/8	1 1/16	5/8	11 3/32	47°11'
46°	*1 3/8	2 1/32	2 3/32	11 1 7/32	3 1/32	11 1/2	1 1/16	2 1/32	11 1/2	46°11'
45°	*1 1 3/32	1 1/16	2 3/32	11 3 1/32	1	11 7/8	2 3/32	1 1/16	11 2 9/32	45°12'
44°	*1 7/16	3/4	2 3/8	*11 5/8	1 1/32	*11 2 3/32	2 3/32	2 3/32	*11 2 1/32	44°12'
43°	*1 1 5/32	2 5/32	3/4	*11 7/32	1 1/16	*11 1 1/32	2 3/32	2 5/32	*11 9/32	43°13'
42°	*1 1/2	1 3/16	3/4	*10 2 7/32	1 3/32	*10 1 5/16	3/4	1 3/16	*10 7/8	42°14'
41°	*1 1 7/32	7/8	3/4	*10 1 5/32	1 1/8	*10 9/16	3/4	2 7/32	*10 1/2	41°14'
40°	*1 9/16	2 9/32	2 5/32	*10 3/32	1 3/16	*10 3/16	3/4	2 9/32	*10 5/32	40°14'
39°	*1 9/32	3 1/32	2 5/32	*9 5/4	1 1/4	*9 1 3/16	2 5/32	1 5/16	*9 1 3/16	39°16'
38°	*1 5/8	1	2 5/32	*9 1 3/32	9/32	*9 1/2	2 5/32	1	*9 1 5/32	38°16'
37°	*1 2 1/32	1 1/16	1 5/16	*9 1/16	1 5/16	*9 9/16	2 5/8	1 1/32	*9 1/8	37°17'
36°	*1 2 3/32	1 1/8	1 3/16	*8 3/4	1 3/8	*8 7/8	1 8/16	1 3/32	*8 1 3/16	36°17'
35°	*1 3/4	1 5/32	1 3/16	*8 7/16	1 7/16	*8 9/16	1 3/16	1 5/32	*8 1/2	35°18'
34°	*1 2 5/32	1 7/32	2 7/32	*8 1/8	1 1/2	*8 1/4	1 8/16	1 7/32	*8 3/16	34°18'
33°	*1 2 7/32	1 9/32	2 7/32	*7 2 7/32	1 1 7/32	*7 1 5/16	2 7/32	1 9/32	*7 7/8	33°20'
32°	*1 2 9/32	1 1 1/32	2 7/32	*7 1 7/32	1 1 9/32	*7 2 1/32	2 7/32	1 1 1/32	*7 9/16	32°20'
31°	*1 1 5/16	1 1 3/32	7/8	*7 1/4	1 2 1/32	*7 3/8	2 7/32	1 1 3/32	*7 5/16	31°21'
30°	*2	1 1/2	7/8	*6 1 5/16	1 2 3/32	*7 3/32	7/8	1 1/2	*7 1/32	30°21'
29°	*2 1/16	1 9/16	7/8	*6 1 1/16	1 2 5/32	*6 2 7/32	7/8	1 9/16	*6 3/4	29°22'
28°	*2 1/8	1 2 1/32	7/8	*6 1 3/8	1 7/8	*6 9/16	7/8	1 2 1/32	*6 1/2	28°22'
27°	*2 7/32	1 3/4	7/8	*6 1/8	1 1 5/16	*6 9/32	7/8	1 2 3/32	*6 7/32	27°23'
26°	*2 9/32	1 1 3/16	2 9/32	*5 7/8	2 1/32	*6 1/32	2 9/32	1 1 3/16	*5 3 1/32	26°24'
25°	*2 3/8	1 1 5/16	2 9/32	*5 5/8	2 1/8	*5 2 5/32	2 9/32	1 1 5/16	*5 2 3/32	25°25'
24°	*2 1 5/32	2 1/32	2 9/32	*5 3/8	2 1/4	*5 1 7/32	2 9/32	2 1/32	*5 7/16	24°26'
23°	*2 9/16	2 1/8	1 5/16	*5 1/8	2 1 1/32	*5 9/32	2 9/32	2 5/32	*5 7/32	23°27'
22°	*2 1 1/16	2 1/4	1 5/16	*4 7/8	2 1 5/32	*5 1/16	1 5/16	2 9/32	*4 3 1/32	22°28'
21°	*2 2 5/32	2 1 3/32	1 5/16	*4 5/8	2 1 9/32	*4 2 7/32	1 5/16	2 1 3/32	*4 2 3/32	21°30'
20°	*2 1 5/16	2 9/16	3 1/32	*4 3/8	2 3/4	*4 5/8	1 5/16	2 9/16	*4 1/2	20°32'

\* Angle exceeds 45°. Pitch given for complement.