

A COURTESY TO THE ROOFING INDUSTRY CHARTS FOR PLANNING SLOPES

AND



ANGLES

ATAS INTERNATIONAL, INC.

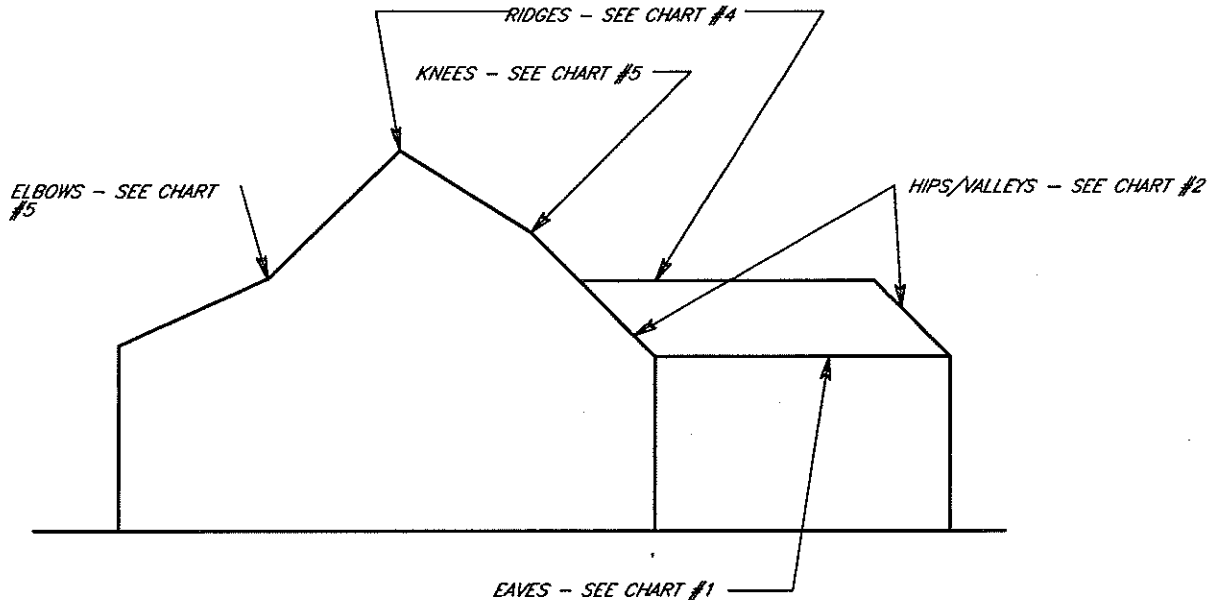
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THE ATTACHED CHARTS ARE PROVIDED AS A COURTESY OF
 ATAS INTERNATIONAL, Inc.
 FOR OUR CUSTOMERS USE.

THE ILLUSTRATION BELOW SHOWS YOU WHICH CHART TO USE IN REGARDS TO A PARTICULAR ROOF AREA CLOSURE PROBLEM.



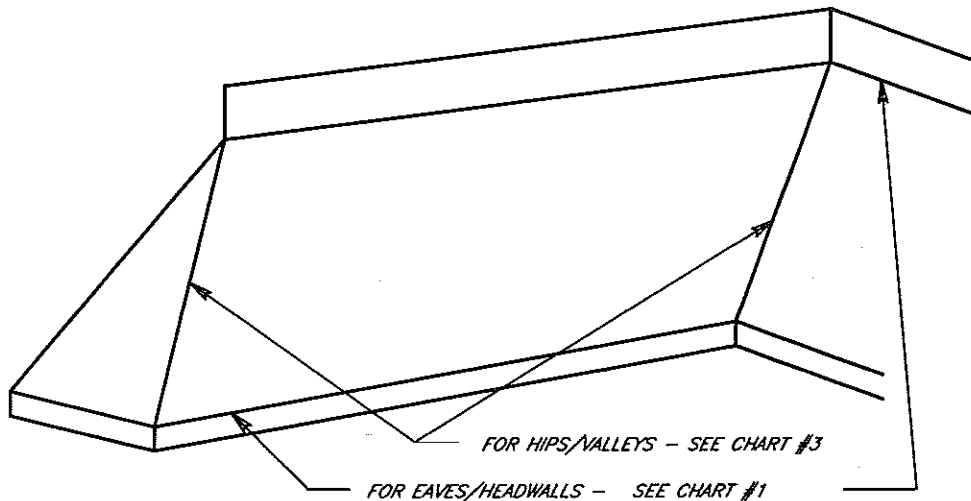
WHEN USING ANY PARTICULAR CHART, JUST NOTE THE ROOF SLOPES AND/OR PITCHES BEING UTILIZED AND FOLLOW SAME ON THE CHART TO FIND THE FORMING ANGLE OF THE TRIMS INVOLVED.

ON THE ABOVE BUILDING ILLUSTRATION, LET'S ASSUME THAT THE SLOPES INVOLVED AT THE RIDGE ARE 12/12 MEETING AN 11/12. YOU WOULD, AS INDICATED, GO TO CHART #4 AND THEN FOLLOW THE 12/12 PITCH ON EITHER THE VERTICAL OR HORIZONTAL LISTING AND FOLLOW THAT LINE UNTIL IT INTERSECTS WITH THE 11/12 PITCH LINE. IN THIS CASE YOU WILL NOTICE THAT THE RIDGE CAP WILL BE FORMED TO A 92 INCLUDED ANGLE.

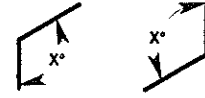
TO FURTHER ILLUSTRATE, THE ELBOW TRANSITION ON THE LEFT SIDE LET'S ASSUME HAS THE ABOVE 11/12 PITCH ROOF MEETING A 4/12 SLOPE ROOF COMING FROM THE EAVE - IN THIS CASE YOU REFER TO CHART #5 AND FOLLOWING THE TWO INVOLVED PITCHES SLOPES TO FIND THAT THE TRANSITION TRIM SHOULD BE FORMED TO AN INCLUDED ANGLE OF 156.

ALL OF THE ATTACHED CHARTS WORK THE SAME WAY AND SHOULD EASE YOUR PLANNING PROBLEMS IN REGARD TO FORMING PROPERLY ANGLED CLOSURES FOR YOUR STRUCTURE.

THE ILLUSTRATION BELOW SHOWS A MANSARD OR CANOPY SITUATION WHERE THE SLOPES/PITCHES MAY BE GREATER THAN THE NORM (12/12).



EAVE/HEAD (BOTH VERTICAL) TO SLOPE



SLOPE AND/OR ANGLE	INCLUDED ANGLE
1/12 SLOPE	95°
2/12 SLOPE	99°
3/12 SLOPE	104°
4/12 SLOPE	108°
5/12 SLOPE	113°
6/12 SLOPE	117°
7/12 SLOPE	120°
8/12 SLOPE	124°
9/12 SLOPE	127°
10/12 SLOPE	130°
11/12 SLOPE	133°
12/12 SLOPE	135°
50° SLOPE	140°
55° SLOPE	145°
60° SLOPE	150°
65° SLOPE	155°
70° SLOPE	160°
75° SLOPE	165°
80° SLOPE	170°
85° SLOPE	175°

EAVE/HEADWALL (BOTH VERTICAL) FORMING ANGLE CHART

CHART #1

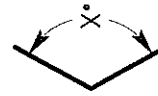
HIP/VALLEY



TO FIND HIP AND/OR VALLEY INCLUDED ANGLE CROSS PITCH TO PITCH														
PITCH	DEGREE	FACTOR	1	2	3	4	5	6	7	8	9	10	11	12
1	4.7636417° OR 4°-45'-49"	1.003466 X FLAT AREA OR RUN	173°	170°	166°	163°	159°	156°	152°	149°	145°	142°	138°	135°
2	9.4623222° OR 9°-27'-45"	1.013794 X FLAT AREA OR RUN	170°	168°	163°	160°	156°	152°	150°	148°	143°	140°	137°	134°
3	14.036243° OR 14°-02'-10"	1.030776 X FLAT AREA OR RUN	166°	163°	160°	157°	153°	151°	148°	145°	139°	138°	135°	133°
4	18.434949° OR 18°-26'-06"	1.054093 X FLAT AREA OR RUN	163°	160°	157°	154°	151°	148°	145°	143°	137°	137°	134°	131°
5	22.619865° OR 22°-37'-12"	1.083333 X FLAT AREA OR RUN	159°	156°	153°	151°	148°	145°	143°	140°	138°	135°	133°	130°
6	26.565051° OR 26°-33'-54"	1.118034 X FLAT AREA OR RUN	156°	152°	150°	148°	145°	143°	141°	139°	136°	134°	131°	129°
7	30.256437° OR 30°-15'-23"	1.157704 X FLAT AREA OR RUN	152°	150°	148°	145°	143°	141°	139°	137°	135°	131°	129°	128°
8	33.690088° OR 33°-41'-24"	1.201850 X FLAT AREA OR RUN	149°	147°	145°	143°	140°	139°	137°	135°	132°	130°	128°	126°
9	36.869898° OR 36°-52'-12"	1.250000 X FLAT AREA OR RUN	145°	143°	141°	139°	138°	136°	135°	132°	130°	129°	126°	125°
10	39.805571° OR 39°-48'-20"	1.301708 X FLAT AREA OR RUN	142°	140°	138°	137°	135°	134°	131°	130°	128°	126°	125°	123°
11	42.510447° OR 42°-30'-38"	1.356568 X FLAT AREA OR RUN	138°	137°	135°	134°	133°	131°	129°	128°	126°	125°	123°	121°
12	45.000000° OR 45°-00'-00"	1.414214 X FLAT AREA OR RUN	135°	134°	133°	131°	130°	129°	128°	126°	125°	123°	121°	120°

HIP AND/OR VALLEY TRUE FORMING ANGLE CHART

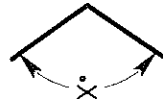
MANSARD TYPE HIPS/VALLEYS



PITCH	SLOPE	FACTOR	TO FIND HIP/VALLEY INCLUDED ANGLE BETWEEN TWO ANGLE ROOFS JUST CROSS PITCH TO PITCH ON CHART.												
			12/12	11/12	10/12	9/12	8/12	7/12	6/12	5/12	4/12	3/12			
45°	12/12	1.414214	120°	117°	114°	111°	107°	104°	101°	97°	94°	90°	90°	85°	90°
50°	14.30/12	1.55572	117°	114°	112°	109°	106°	103°	100°	98°	96°	93°	90°	90°	90°
55°	17.14/12	1.74345	114°	112°	109°	106°	103°	100°	98°	96°	94°	92°	90°	90°	90°
60°	20.78/12	2.00000	111°	108°	106°	103°	100°	98°	96°	94°	92°	90°	90°	90°	90°
65°	25.73/12	2.36620	107°	105°	103°	100°	98°	96°	94°	92°	90°	90°	90°	90°	90°
70°	32.97/12	2.92380	104°	102°	101°	98°	96°	94°	92°	90°	90°	90°	90°	90°	90°
75°	44.78/12	3.86370	101°	99°	98°	96°	94°	92°	90°	90°	90°	90°	90°	90°	90°
80°	68.06/12	5.75877	97°	96°	95°	93°	92°	90°	90°	90°	90°	90°	90°	90°	90°
85°	137.06/12	11.47371	94°	93°	93°	91°	90°	90°	90°	90°	90°	90°	90°	90°	90°
90°	INFINITY	INFINITY	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°	90°

MANSARD TYPE HIP/VALLEY TRUE FORMING ANGLE CHART

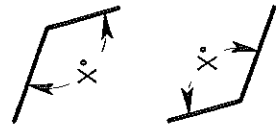
RIDGES



TO FIND RIDGE INCLUDED ANGLE: CROSS PITCH TO PITCH		PITCH												
PITCH	DEGREE	FACTOR	1	2	3	4	5	6	7	8	9	10	11	12
12 1	4.7636417° OR 4'-45"-49"	1.003466 X FLAT AREA OR RUN	170°	166°	161°	157°	153°	149°	145°	142°	138°	135°	133°	130°
12 2	9.4623222° OR 9'-27"-45"	1.013794 X FLAT AREA OR RUN	166°	161°	157°	152°	148°	144°	140°	137°	134°	131°	128°	126°
12 3	14.036243° OR 14'-02"-10"	1.030776 X FLAT AREA OR RUN	161°	157°	152°	148°	143°	139°	136°	132°	129°	126°	123°	121°
12 4	18.434949° OR 18'-26"-06"	1.054093 X FLAT AREA OR RUN	157°	152°	148°	143°	139°	135°	131°	128°	125°	122°	119°	117°
12 5	22.819865° OR 22'-37"-12"	1.083333 X FLAT AREA OR RUN	153°	148°	143°	139°	135°	131°	127°	124°	121°	118°	115°	112°
12 6	26.866051° OR 26'-33"-54"	1.118034 X FLAT AREA OR RUN	149°	144°	139°	135°	131°	127°	123°	120°	117°	114°	111°	108°
12 7	30.256437° OR 30'-15"-23"	1.157704 X FLAT AREA OR RUN	145°	140°	136°	131°	127°	123°	119°	116°	113°	110°	107°	105°
12 8	33.890068° OR 33'-41"-24"	1.201850 X FLAT AREA OR RUN	142°	137°	132°	128°	124°	120°	116°	113°	109°	107°	104°	101°
12 9	36.869898° OR 36'-52"-12"	1.250000 X FLAT AREA OR RUN	138°	134°	129°	125°	121°	117°	113°	109°	106°	103°	101°	98°
12 10	39.805571° OR 39'-48"-20"	1.301708 X FLAT AREA OR RUN	135°	131°	126°	122°	118°	114°	110°	107°	103°	100°	98°	95°
12 11	42.510417° OR 42'-30"-38"	1.356568 X FLAT AREA OR RUN	133°	128°	123°	119°	115°	111°	107°	104°	101°	98°	95°	92°
12 12	45.000000° OR 45'-00"-00"	1.414214 X FLAT AREA OR RUN	130°	126°	121°	117°	112°	108°	105°	101°	98°	95°	92°	90°

RIDGE TRUE FORMING ANGLE CHART

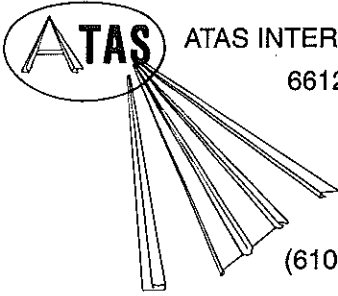
TRANSITIONS (KNEE AND/OR ELBOW)



PITCH	DEGREE	FACTOR	PITCH											
			1	2	3	4	5	6	7	8	9	10	11	12
1	4.7636417° 4'-45"-49"	1.003465 X FLAT AREA OR RUN	N/A	175°	171°	166°	162°	158°	155°	151°	148°	145°	142°	140°
2	9.4623222° 9'-27"-45"	1.013794 X FLAT AREA OR RUN	175°	N/A	175°	171°	167°	163°	159°	156°	153°	150°	147°	145°
3	14.036243° 14'-02"-10"	1.030776 X FLAT AREA OR RUN	171°	175°	N/A	176°	171°	167°	164°	160°	157°	154°	152°	149°
4	18.434949° 18'-26"-06"	1.054093 X FLAT AREA OR RUN	166°	171°	176°	N/A	176°	172°	168°	165°	162°	159°	156°	153°
5	22.619865° 22'-37"-12"	1.083333 X FLAT AREA OR RUN	162°	167°	176°	176°	N/A	176°	172°	169°	166°	163°	160°	158°
6	26.565051° 26'-33"-54"	1.118034 X FLAT AREA OR RUN	158°	163°	167°	172°	176°	N/A	176°	173°	170°	167°	164°	162°
7	30.256437° 30'-15"-23"	1.157704 X FLAT AREA OR RUN	155°	159°	164°	169°	172°	176°	N/A	177°	173°	170°	168°	165°
8	33.690068° 33'-41"-24"	1.201850 X FLAT AREA OR RUN	151°	156°	160°	165°	169°	173°	177°	N/A	177°	174°	171°	169°
9	36.869898° 36'-52"-12"	1.250000 X FLAT AREA OR RUN	148°	153°	157°	162°	166°	170°	173°	177°	N/A	177°	174°	172°
10	39.805371° 39'-48"-20"	1.301708 X FLAT AREA OR RUN	145°	150°	154°	159°	163°	167°	170°	174°	177°	N/A	177°	175°
11	42.510447° 42'-30"-38"	1.359568 X FLAT AREA OR RUN	142°	147°	152°	156°	160°	164°	168°	171°	174°	177°	N/A	178°
12	45.000000° 45'-00"-00"	1.414214 X FLAT AREA OR RUN	140°	145°	149°	153°	158°	162°	165°	169°	172°	175°	178°	N/A

TRANSITION (KNEE AND/OR ELBOW TYPE) TRUE FORMING ANGLE CHART

This belongs to: _____



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