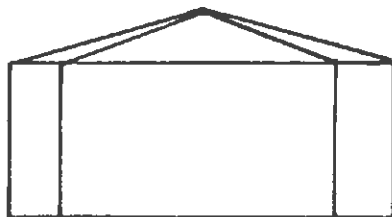
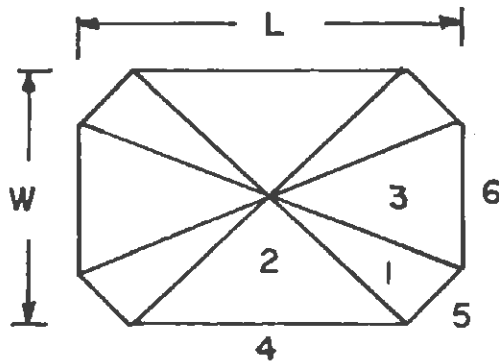


STEP	BEARING INDEX	L/W→ mm	Values listed in a column are angles (degrees) to give an "Emerald" preform											
			1.20 5x6 10x12	1.22 4.5x5.5 9x11	1.25 4x5 8x10	1.27 5.5x7 11x14	1.29 7x9 14x18	1.31 6.5x8.5 13x17	1.33 3x4 6x8	1.36 5.5x7.5 11x15	1.40 5x7 10x14	1.44 4.5x6.5 9x13	1.50 4x6 8x12	1.67 3x5 6x10
C1	56-40-24-18		17.7	17.5	17.3	17.1	17.0	16.8	16.6	16.3	16.1	15.7	15.3	14.2
C2	64-32		22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
C3	48-16		18.6	18.3	17.9	17.6	17.4	17.1	16.9	16.5	16.1	15.7	15.1	13.6
C4	64-32		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
C5	56-40-24-18		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0
C6	48-16		90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0	90.0

# EMERALD PREFORM



This preform table is based on a CAM (Centerpoint-angle-method) crown first cutting sequence. Since the usual "Emerald" pavilion has a keel type culet it would require a "Vee" dop to mount it properly, but many cutters has only "cone" dops. However, by cutting crown first the stone can be dopped on the final table facet, a nice flat surface amenable to dopping with "cone" dops.

Step C2 is arbitrarily selected as 22.0 degrees. Often this facet can be the basis for the side facets next to the table in the final design. There is no magic involved, 22.0 degrees is a workable angle, but many other angles could have been chosen if the other angles are suitably adjusted.

In this preform the corner facets (Step C1) are exactly half the size of the end facets (Step C3) regardless of L/W ratio. For the mathematically inclined the formula is:

$$a = W / 2(1 + \text{Cos } 45)$$

where: a is the length of the corner facet  
W is the width dimension

Elevation angles are chosen so that: C2 = 22.0

$$C3 = \text{Tan}^{-1} (0.40403 / (L/W))$$

$$C1 = \text{Tan}^{-1} (0.20201 / ((0.35355 L/W) + 0.20711))$$

L/W is the length to width ratio

Exact millimeter size stones are obtained by calibre cutting at Step C4. With elevation angle control set at 90 degrees, alternately cut at 64 and 32 until the mm size for the width set. Then finish the preform by cutting Steps C5 and C6 (also at 90 degrees) to give a level temporary "girdle" line. The result should be an exact size emerald shape with the desired L/W proportion and the end facet twice the size of the corners.