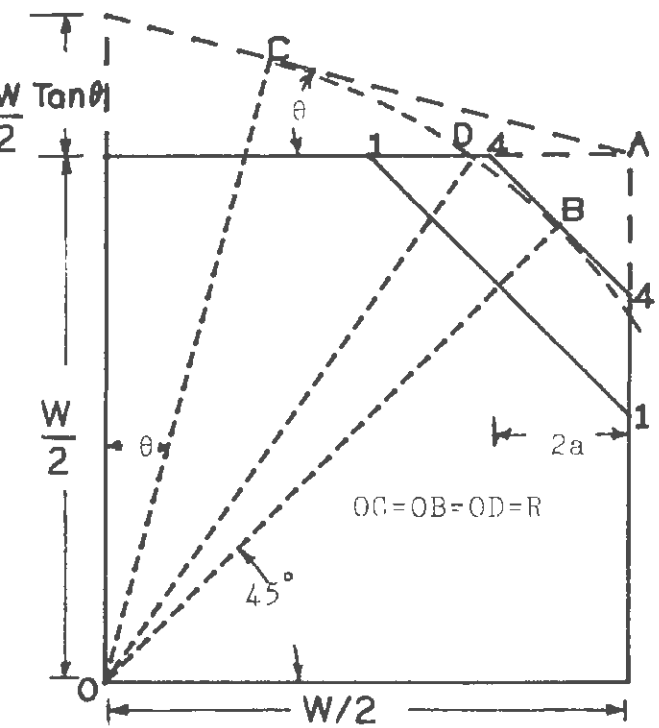

Figure 1 LFM Methode

Method 1

$X_4 = (W/2) - 2a$

$a = (W/2) - R \cos 45$

$\cos \theta = R / (W/2)(1 - \tan \theta)$

$X_4 = 2 R \cos 45 - (W/2)$

Method 2

$X_D = \sqrt{(R^2 - (W/2)^2)}$

LOCATOR FACET METHOD (LFM)

Figure 1 represents the Plan View of the first quadrant for a typical Cut Corner Square (it could also apply with some modification to any polygon shape). This is the situation after the girdle has been established by cutting the girdle segments and the defining break facets, a meet-point (A) is established at girdle level to serve as a target for the LOCATOR FACET. Size of the final corner facet will be determined by selection of the bearing for the LOCATOR FACET. In Figure 1 the line 4-4 is the corner that would result with a 96 index and 4 gear teeth (15 deg) and the line 1-1 is the corner that would result with a 96 index and 1 gear tooth (3.75 deg) for the bearing of the Locator Facet. Point C is the CED of a Locator Facet with bearing 15 degrees.

Method 1 For Method 1 the corner facet is cut at the TANGENT to the arc formed from the Locator Facet CED (point B). This is easily done by keeping the mast height and elevation angle identical to the Locator Facet, but changing the bearing to that needed for the corner facet. For a 96 index this is 84 (or 12).

Method 2 is like Method 1 except that the intersection point (D) on the girdle is determined by swinging an arc from the Locator Facet until it intersects the previously established girdle line. Both mast height and elevation angle are kept constant during this process so the distance from the center to the girdle intersection at (D) is exactly (R) the CED of the Locator Facet. The result is a slightly larger corner facet than given by Method 1 for the same bearing of the Locator Facet.

Using different index gears gives a large variety of possibilities for the angle θ and thus a number of reproducible facet sizes for the corner facet at the girdle. Figure 1 illustrates two of the possible corner sizes for a 96 index gear. In general the smaller the angle θ the larger the corner facet, and Method 2 gives larger corner facets than Method 1 for the same angle θ.