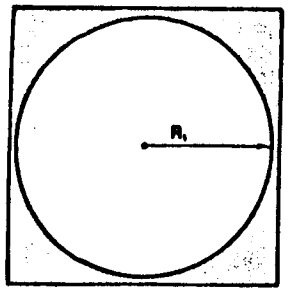
STANDARD ELEC/WATER DRIVE

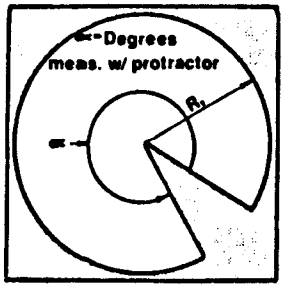


FULL CIRCLE W/O E.G.

$$\text{Area} = \frac{R^2\ \pi}{43560}$$

$$= \frac{1294 \times 1294 \times 3.1416}{43560}$$

$$= 120.7 \text{ Acres}$$

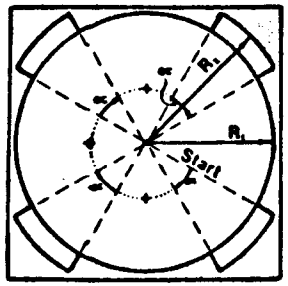


PART CIRCLE W/O E.G.

$$\text{Area} = \left(\frac{R^2\pi}{43560}\right) \times \left(\frac{\propto}{360}\right)$$

$$= \frac{1294 \times 1294 \times 3.1416}{43560} \times \frac{330}{360}$$

$$= 110 \text{ Acres}$$



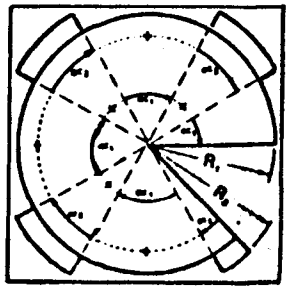
FULL CIRCLE WITH E.G.

$$\text{Area} = \left[\left(\frac{R_1^2\ \pi}{43560}\right) \times \left(\frac{360-\sum\propto}{360}\right)\right] + \left[\left(\frac{R_2^2\ \pi}{43560}\right) \times \left(\frac{\propto}{360}\right)\right]$$

$$= \left[\frac{1294 \times 1294 \times 3.1416}{43560} \times \frac{240}{360}\right] +$$

$$\left[\frac{1364 \times 1364 \times 3.1416}{43560} \times \frac{120}{360}\right]$$

$$= 125.2 \text{ Acres}$$



PART CIRCLE WITH E.G.

$$\text{Area} = \left[\left(\frac{R_1^2\ \pi}{43560}\right) \times \left(\frac{\sum\propto_1}{360}\right)\right] + \left[\left(\frac{R_2^2\ \pi}{43560}\right) \times \left(\frac{\sum\propto_2}{360}\right)\right]$$

$$= \left[\frac{1294 \times 1294 \times 3.1416}{43560} \times \frac{225}{360}\right] +$$

$$\left[\frac{1364 \times 1364 \times 3.1416}{43560} \times \frac{210}{360}\right]$$

$$= 109.55 \text{ Acres}$$

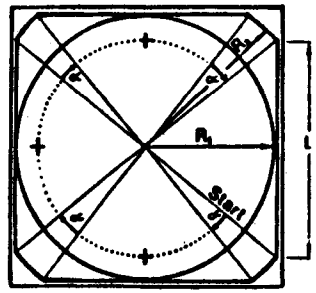
CORNER SYSTEMS

FULL CIRCLE - 4 CORNERS

$$\text{Area} = \left[\frac{4\left(\frac{R_1\ L}{2}\right)}{43560}\right] + \left[\frac{R_2^2\ \pi}{43560} \times \frac{\sum\propto}{360}\right]$$

$$= \left[\frac{4\left(\frac{1268 \times 2100}{2}\right)}{43560}\right] + \left[\frac{1581 \times 1581 \times 3.1416}{43560} \times \frac{56}{360}\right]$$

$$= 160 \text{ Acres}$$



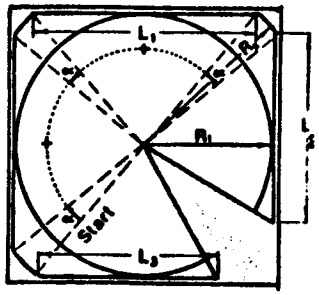
PART CIRCLE

$$\text{Area} = \left[\frac{2\left(\frac{R_1L_1}{2}\right) + \left(\frac{R_1L_2}{2}\right) + \left(\frac{R_1L_3}{2}\right)}{43560}\right] + \left[\frac{R_2^2\ \pi}{43560} \times \frac{\sum\propto}{360}\right]$$

$$= \left[\frac{2\left(\frac{1268 \times 2100}{2}\right) + \left(\frac{1268 \times 1800}{2}\right) + \left(\frac{1268 \times 1900}{2}\right)}{43560}\right] +$$

$$\left[\frac{1581 \times 1581 \times 3.1416}{43560} \times \frac{48}{360}\right]$$

$$= 138 \text{ Acres}$$

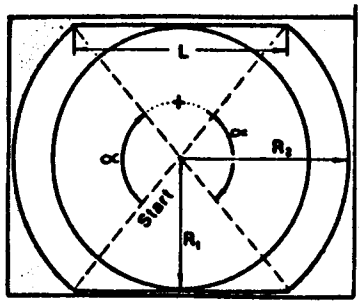


RECTANGULAR FIELD

$$\text{Area} = \left[\frac{2\left(\frac{R_1L}{2}\right)}{43560} + \left(\frac{R_2^2\ \pi}{43560} \times \frac{\sum\propto}{360}\right)\right]$$

$$= \left[\frac{2\left(\frac{1268 \times 2050}{2}\right)}{43560}\right] + \left[\left(\frac{1581 \times 1581 \times 3.1416}{43560}\right) \times \left(\frac{220}{360}\right)\right]$$

$$= 169.77 \text{ Acres}$$



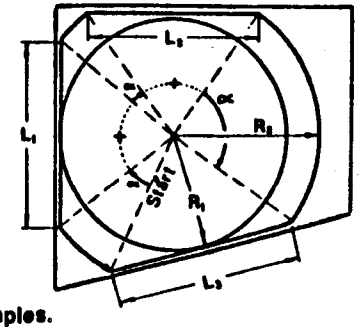
ODD SHAPE FIELD

$$\text{Area} = \left[\frac{\left(\frac{R_1L_1}{2}\right) + \overbrace{\left(\frac{R_1L_2}{2}\right) + \left(\frac{R_1L_3}{2}\right)}^{\text{As Required}}}{43560}\right] + \left[\frac{R_2^2\ \pi}{43650} \times \frac{\sum\propto}{360}\right]$$

$$= \left[\frac{\left(\frac{1268 \times 1650}{2}\right) + \left(\frac{1268 \times 1700}{2}\right) + \left(\frac{1268 \times 1600}{2}\right)}{43560}\right] +$$

$$\left[\frac{1581 \times 1581 \times 3.1416}{43560} \times \frac{133}{360}\right]$$

$$= 138.7 \text{ Acres}$$



NOTE: Lengths & Angles must be measured in the field or from maps, etc./The above dimensions & angles are only typical examples.

Figure 684-5

DETERMINING AREA & IRRIGATED ACREAGE

(continued)

Formulas for calculating acreages in fields and segments are shown below:

1. Area of a square = L^2
   "L" is the length in feet of one side of the square.

if L = 2640'

L^2 = 2600 x 2640

Area = 6,969,600 sq. ft.

Acres = $\frac{6{,}969{,}600\ ft^2}{*43{,}560\ ft.\ sq.}$ = 160 acres

*One (1) Acre = 43,560 ft^2

Acres = $\frac{ft.^2}{43{,}560\ ft.\ sq.}$

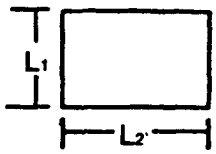
2. Area of a rectangular field. (A)

Area = L_1 x L_2

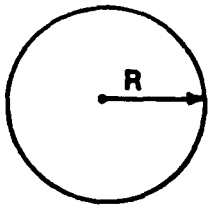
Area = 2640' x 5280

= 13,939,200

Acres = $\frac{13{,}939{,}200\ sq.\ ft.}{43{,}560'}$ = 320 acres



3. Area of a circle



Area = R^2 x π

if R = 1300

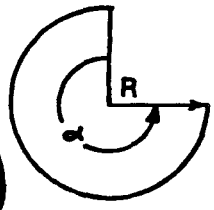
A = 1300^2 x 3.14

= 5,309,291

Acres = $\frac{5{,}309{,}291\ sq.\ ft.}{43{,}560\ sq.\ ft.}$ = 121.88 acres

(π = 3.1416)

4. Area of a part circle



Area = $(R^2 \times \pi) \times \frac{\alpha}{(360)°}$

if R = 1300 & α 270°

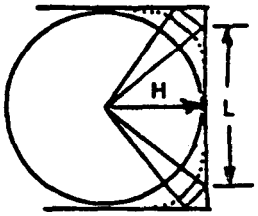
Area = $(1300^2 \times 3.14) \times \left(\frac{270°}{360°}\right)$

= 3,981,968 ft^2

Acres = $\frac{3{,}981{,}968\ ft^2}{43{,}560\ ft^2}$ = 91.41 acres

α = number of degrees, measured with a protractor

5. Area of a triangle



Area = $\frac{H \times L}{2}$

if H = 1300 ft.

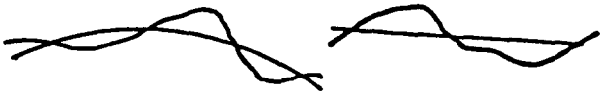
& L = 1900 ft.

Area = $\frac{(1300)\ (1900)}{2}$ = 1,235,000 ft^2

= 1,235,000 ft^2

Acres = $\frac{1{,}235{,}000}{43560}$ = 28.4

"H" is the same as system length and is equal to the "radius"

"L" is length of the base in the triangle

NOTE: To calculate (estimate) the acreage included in a very irregularly shaped area irrigated by a corner system, draw a straight line or a circular arc that will most nearly provide an "average" boundary.