



Solution to Problem 49

$$\text{AREA OF A-B-C} = \frac{1}{2} bc \sin 36^\circ = \frac{1}{2} ab \sin 60^\circ = \frac{1}{2} ac \sin 84^\circ = 4,356,000 \text{ sq. ft.}$$

$$bc = 14,821,739.68 \text{ sq. ft., so that } b = 14,821,739.68 / c$$

$$ab = 10,059,751.09 \text{ sq. ft., and by substitution from above}$$

$$c/a = 14,821,739.68 / 10,059,751.09 \text{ sq. ft.,}$$

$$\text{or } 10,059,751.09 c / 14,821,739.68 = a$$

$$ac = 8,759,988.132 \text{ sq. ft.}$$

$$10,059,751.09 c^2 / 14,821,739.68 = 8,759,988.132$$

$$\text{from which } c = 3592.5906', b = 4125.6411', \text{ and } a = 2438.3485'$$

Alternatively:

$$\text{Area} = b^2 \sin 36^\circ \sin 60^\circ / 2 \sin 84^\circ, \text{ from which } b = 4125.64114'$$

$$\text{Area} = a^2 \sin 60^\circ \sin 84^\circ / 2 \sin 36^\circ, \text{ from which } a = 2438.34855'$$

$$\text{and } \text{Area} = c^2 \sin 84^\circ \sin 36^\circ / 2 \sin 60^\circ, \text{ from which } c = 3592.59062'$$

