Calculate the total area (by coordinate geometry, DMDs, triangles, or whatever you are best at doing) = 185,626.47 sq. ft.
Half of that area = 92,813.24 square feet.

Calculate the area ABCDG (G being the midpoint of AF): 109,628.46 sq. ft.

Since that’s too large by 16,815.22 sq. ft., construct a perpendicular to line CD from G at H, and calculate the area of GHD = 19,041.36 sq. ft.

That’s still off by 2,226.13 sq. ft., so draw line GJ and find HJ such that GHJ = 2,226.13 sq. ft.: HJ = 9.792′, DJ = 73.965′

The dividing line is then N 7º27′59″ W 454.786′

Note that area JDG = \( \frac{1}{2} DJ \times 462.331′ \times \sin 79º33′45″ = 16,815.22 \text{ sq. ft.} \), from which \( DJ = 73.965′ \) directly.

This is known as a two point resection or an inaccessible baseline (like a church steeple and a radio tower with known coordinates).

Angle ABD = 180º - 50º09′35″ – 22º58′44″ – 32º04′52″ = 74º46′49″
Angle ACD = 180º - 22º58′44″ – 32º04′52″ – 43º07′10″ = 81º49′14″

\[
\frac{BD}{\sin (50º09′35″ – 22º58′44″)} = \frac{AD}{\sin 74º46′49″}
\]

\[BD = 0.991795312 \ AD\]

\[
\frac{CD}{\sin 22º58′44″} = \frac{AD}{\sin 81º49′14″}
\]

\[CD = 0.394404074 \ AD\]

\[BC = 464.400 = BD + CD = -2 \times BD \times CD \times \cos 43º07′10″\]

Alternately, assume a value for AD and solve for BC. AD is directly proportional to BC, so your solution will be proportional to 464.400.