

From the axle at point B to the stone at the southwest corner, point A, is South 40.61 chains, just as the deed calls for.

The lower left triangle can be solved by the formula for the area of a triangle: $A = \frac{1}{2} \cdot a \cdot b \cdot \sin C$, where a and b are sides of the triangle and C is the included angle.

In this case $A = 19,600\text{m}^2$, a and b are both 200.000, so $C = 78^\circ 31' 18''$, and from the stone at point A to the RR spike at point D is North $78^\circ 31' 18''$ East 51.20 chains.

Constructing a perpendicular from the stone to the old north-south fence line prolonged southerly, point E, yields a distance between the Section line and the easterly parcel line of $51.20 \cdot \cos(11^\circ 28' 42'') = 50.18$ chains, with the RR spike being $51.20 \cdot \sin(11^\circ 28' 42'') = 10.19$ chains north of point E. The distance along the old fence line from the RR spike to a point perpendicular to the axle at point B is 40.61 chains – 10.19 chains = 30.42 chains.

The area of trapezoid ABCD, given as 2,406.5 square chains, can be computed by

$Area = 2406.5 = \frac{AB + CD}{2} \cdot AE = \frac{40.61 + CD}{2} \cdot 50.18$, from which $CD = \text{North } 55.30$ chains, and $CF = 55.30 + 10.19 - 40.61 = 24.88$ chains

The right triangle BCF has an hypotenuse of $\sqrt{50.18^2 + 24.88^2} = 56.01$ chains

The bearing of the closing line will be $\arctan = \frac{50.18}{24.88} = 63^\circ 37' 38''$, or

South $63^\circ 37' 38''$ West 56.00 chains

Note, calculating to 3 decimal places:

$$AB = 40.613$$

$$AD = 51.210$$

$$DE = 10.189$$

$$AE = 50.177$$

$$DE = 40.613 - 10.189 = 30.424$$

$$2406.5 = \frac{40.613 + CD}{2} \cdot 50.177, \text{ and } CD = 55.307$$

$$CF = 55.307 + 10.189 - 40.613 = 24.883$$

$$BC = \sqrt{24.883^2 + 50.177^2} = 56.008$$

$$\text{Angle FCB} = 63^\circ 37' 23''$$

