

Answer

1. The original plat reports the bearing and distance from the true point for the cor. to the Witness Corner. In this problem the Witness Corner is S. 0° 01' E., 0.27 chs. (17.82 ft.) from the true point.

Knowing that my instrument is in correct adjustment from recent observations, on a meridian established by Polaris Observations, as described in the original returns, I set off 46° 08' N. on the lat arc; 23° 20' N. on the decl. arc; and at 8^{hrs} a. m., l. m. t., determine a meridian with the solar at the true point for cor. of 2 secs. 26, 27, 34 and 35.

The cor. of secs. 26, 27, 34 and 35, was in danger of being destroyed so a witness cor was established 27 lks S. of true point as follows;

2. For corners that would be reestablished by double proportionate measurement, the true point for the corner will be determined by extending the line through the witness corner at record distance. Therefore the true point for the cor. of secs. 26, 27, 34 and 35 will be determined by projecting the line from the ¼ sec. cor. of secs. 34 and 35 through the witness corner and at record distance from the witness corner.

‡ Calculate the retracement bearing from the ¼ sec. cor. of secs. 34 and 35 to the witness corner.

$$\begin{aligned} \text{N. } 12,628.29 - \text{N. } 10,000.00 &= \text{N. } 2,628.29 \\ \text{E. } 10,018.46 - \text{E. } 10,000.00 &= \text{E. } 18.46 \end{aligned}$$

$$\begin{aligned} \text{E. } 18.46 \div \text{N. } 2,628.29 &= 0.007024 \\ \text{Arc Tan of } 0.007024 &= 0^\circ 24' 09'' \\ \text{Bearing} &= \text{N. } 0^\circ 24' 09'' \text{ E.} \end{aligned}$$

‡ Calculate the retracement distance from the $\frac{1}{4}$ sec. cor. of secs. 34 and 35 to the witness corner.

$$E. 18.46 \div \sin 0^\circ 24' 09'' = 2628.35 \text{ ft.}$$

Calculate coordinates for the true point:

$$N. 0^\circ 24' 09'' \text{ E., } 17.82 \text{ ft.}$$

$$\sin 0^\circ 24' 09'' \times 17.82 = E. 0.13 \text{ ft.}$$

$$\cos 0^\circ 24' 09'' \times 17.82 = N. 17.82 \text{ ft.}$$

‡ Calculate the coordinates of the true point

$$N. 12,628.29 \text{ ft.} + N. 17.82 \text{ ft.} = N. 12646.11 \text{ ft.}$$

$$E. 10,018.46 \text{ ft.} + E. 0.13 \text{ ft.} = E. 10,018.59 \text{ ft.}$$

‡ Bearings of the lines into the true point

- From $\frac{1}{4}$ S 34 & 35: N. $0^\circ 24' 09''$ E., 2646.18 ft. (40.094 chs.)
- From $\frac{1}{4}$ S 26 & 35: N. $89^\circ 09' 11''$ W., 2628.62 ft. (39.830 chs.)
- From $\frac{1}{4}$ S 27 & 34: N. $89^\circ 28' 24''$ E., 2663.84 ft. (40.358 chs.)
- From $\frac{1}{4}$ S 26 & 27: S. $0^\circ 27' 06''$ E., 2636.18 ft. (40.033 chs.)