

SPECIAL ARTICLE

AN OFFSET PLOTTING METHOD FOR TRIAL LINES

By T. P. Jones

The following type of calculation has been used on retracement work in Northern Ontario. It has proved useful when a trial line between original mile posts or corners could not be kept to a straight line for some reason, and several offsets from points on the trial line to the true line were required. Until the time when this method was evolved, to find each offset distance, we would carry out a "missing course" calculation, and solve a triangle (which usually had one very small angle). If several offsets were required, the amount of work involved was time consuming and tedious.

Our present method is to plot the field work on squared paper, using two different scales, and to scale off the results. One scale is used for the chainage along the trial line and the other scale for all offset distances from the trial line. The length of the trial line, and the length of the longest offset determine the scales to be used. The larger the scales, the more accurate the results.

The P.I. angles along the trial line are not plotted with a protractor or a drafting arm, but are drawn using tangent offset distances. The tangent offset for each course on the trial line is calculated, which is a quick and easy operation. The least confusing way to find the deflection angles to obtain these tangent offsets, I have found, is to put an assumed bearing, say North, on the longest tangent on the line, and then to work out the bearings of the other course. The amount by which each course is either East or West of North, is the angle to use to determine each respective offset distance.

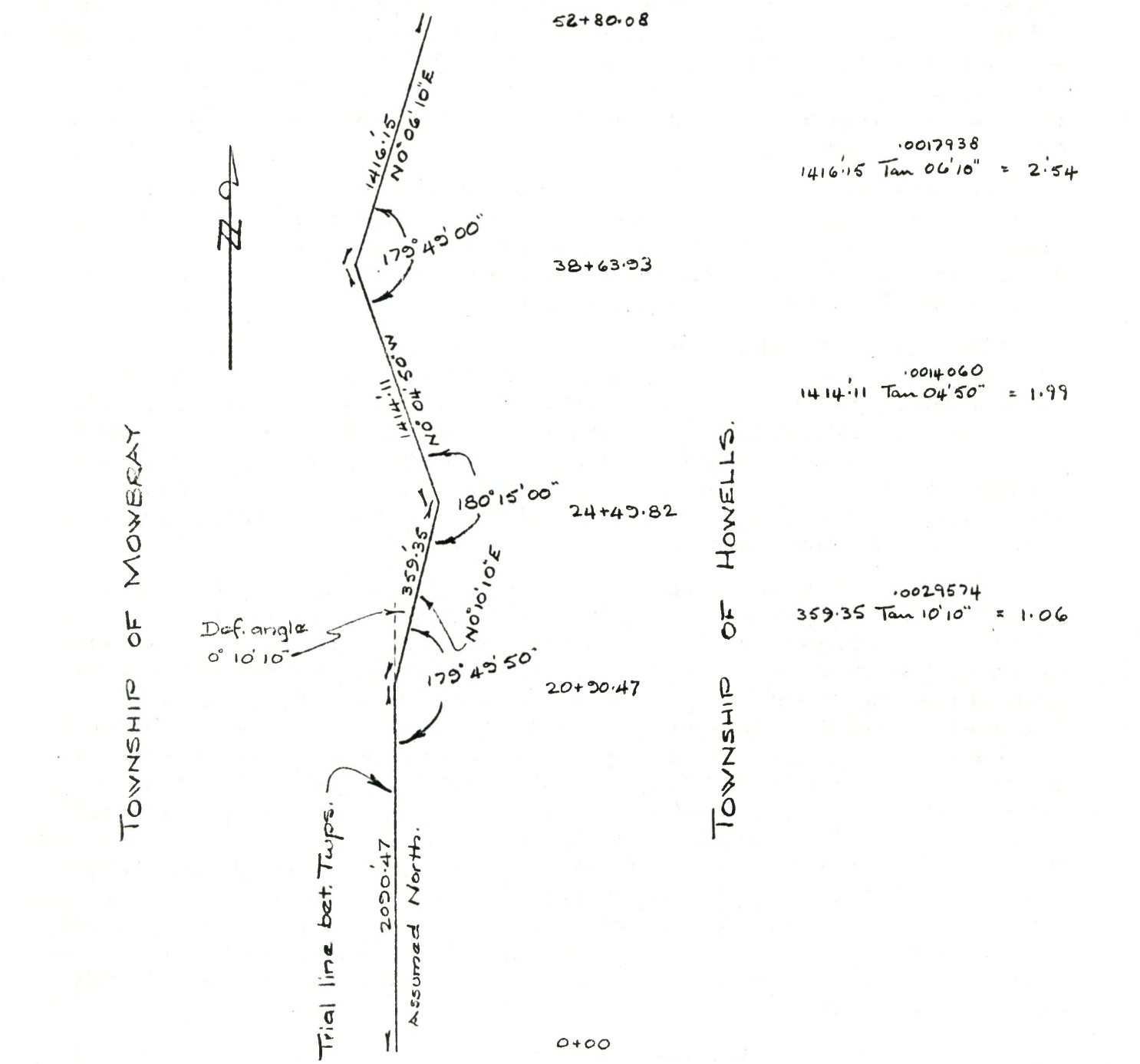
To plot the diagram, cross section paper or some similar squared paper is required. In the example attached, North was accepted as running up the page and all trial line chainages were measured along the vertical grid lines, and all offset distances were measured along the horizontal grid lines. When the various tangents of the trial line had been drawn in, all except those bearing true North (assumed) formed the hypotenuse of a right angled triangle. The line so formed can look a little strange. For example, a line bearing $N 0^{\circ} 10' E$ could appear to be lying somewhere near $N 70^{\circ} E$, depending upon the scales used. No distances can be scaled along these hypotenuses, of course. Once the original posts found were plotted, the straight line between the two posts was drawn in for the true line. (In this case, it had been previously determined that the aforementioned straight line fitted the other original evidence found, and had been accepted as the true line). The distance from any point on the trial line to the true line could then be scaled along or parallel to the horizontal grid lines. If large enough scales can be selected, the offset distances required can be scaled off more accurately than they can be laid out in the field.

This method of plotting can be further utilized if original evidence found is also plotted. In fact, this system was first devised to see if the straight line joining adjacent corners would fit the other evidence found, and if it would not, then at what point, or points, the true line should be caused to change its direction.

SUBJECT LITTLE LONG G.S. SEE NOTES, PAGE.....

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REMARKS To find Tangent offsets along Trial Line between Townships.



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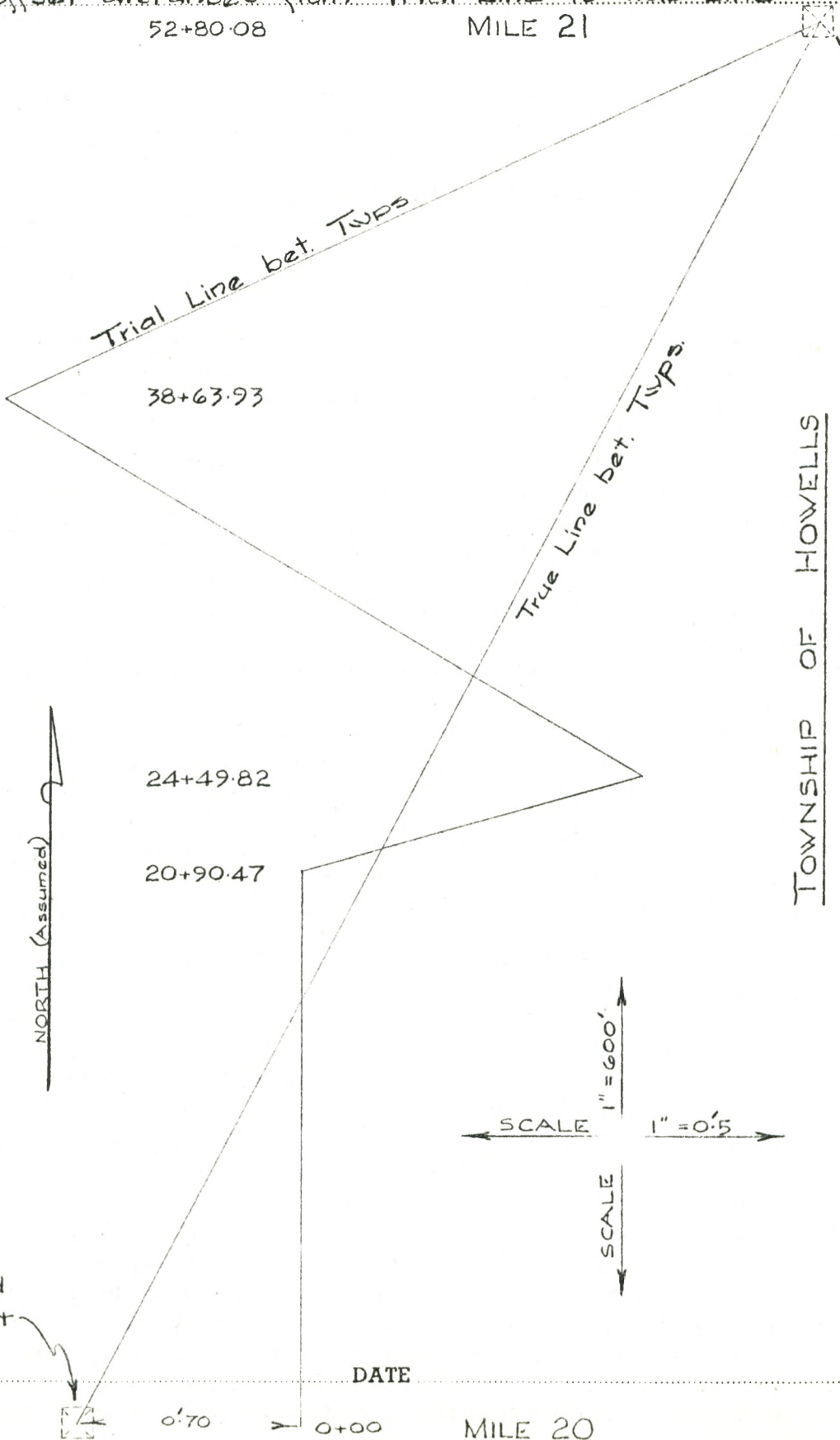
REMARKS To find offset distances from Trial Line to True Line.

52+80.08

MILE 21

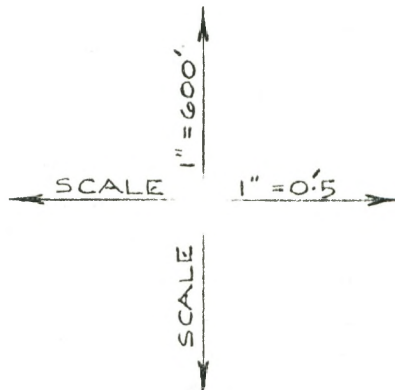


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CALCULATIONS BY..... DATE.....



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0+00

MILE 20