TOWNSHIPS AND TOWNSHIP SUBDIVISIONS

INTRODUCTION

The subdivision of quadrangles into townships and of townships into sections is complicated by the convergence of meridians and by unavoidable inaccuracies in measurements. The variations that are introduced by these factors must be maintained within the limits defined by the Manual of Instructions, and the principles outlined therein should be clearly understood both by the U.S. Land Surveyors who originally survey the land and by the private surveyors who follow them. There are important fundamental differences in procedure between laying out township boundaries and laying out section boundaries.

DIVISION OF LANDS

The public lands are divided into smaller areas as described in the following paragraphs.

TRACTS

The regions are divided first into tracts approximately 24 miles square. The division is done by placing monuments along the principal meridian at intervals of 24 miles from the initial point. Standard parallels (also called correction lines) are run east and west from the principal meridian. These are monumented at intervals of 40 chains. The standard parallels are designated with respect to their relationship to the base line and become the First Standard Parallel North, Second Standard Parallel North, First Standard Parallel South, and so on until the limits of the region have been reached.

Guide meridians are extended north from the base line, and from each standard parallel at intervals of 24 miles east and west from the principal meridian. Each guide meridian is terminated at its intersection with the next standard parallel to the north of its point of origin. The guide meridians become known as the First Guide Meridian East, First Guide Meridian West, and so on, depending upon their locations with respect to the principal meridian. As with the other principal lines, the guide meridians are monumented at intervals of 40 chains.

The tract of land bounded by successive pairs of standard parallels and guide meridians will have theoretical boundary lengths of 24 miles on the west, south, and east sides. The north boundary, because of the convergence of the meridians, will be less than 24 miles. Because of errors of field measurements, the boundaries will seldom equal their theoretical lengths.

TOWNSHIPS

The 24-mile-square tracts are divided into townships. Range lines are run north along true meridians from the monuments (known as standard township corners) placed at 6-miles intervals, east and west of the principal meridian, along the base line and each standard parallel. Each range line terminates at its intersection with the first standard parallel to the north of its point of origin.
These intersection points, at the termini of the range lines and guide meridians, are known as closing township corners. Township corners are established at 6-mile intervals on these range lines, and quarter-section and section monuments are placed at intervals of 40 chains. Township lines, or latitudinal lines, are then run along parallels of latitude to join the township corners marked by monuments previously set at 6-mile intervals along the principal meridian, guide meridians, and range lines. These range lines and township lines divide the tract into townships. The lengths of the east and west boundaries of a township are theoretically equal to 6 miles. The north and south boundaries of a township vary from a maximum length of 6 miles for its southern boundary at the base line or standard parallel forming the south line of a 24-mile quadrilateral to a minimum length at its northern boundary. Figure 1 shows the division of four such tracts into 16 townships by a baseline, principal meridian, standard parallels, guide meridians, range lines, and township lines.

Figure 1 Division of Tracts
The actual subdivision procedure is as follows: The division of a quadrangle begins at a point six miles east of the principal or guide meridian. A range line is run due north for six miles, with monuments placed at half-mile intervals. At this point, six miles east and six miles north of the southwest corner of the township, a random line is run on a true parallel of latitude to the west, with temporary marks placed at half-mile intervals. From the point where the random line intersects the principal meridian or guide meridian, the distance to the previously established north-west corner of the township is measured. This measurement is known as the "falling" of the random line. The falling is proportioned back to the random line from the temporary monuments, as illustrated in Figure 2.

This procedure illustrates the principles of the weight of authority of monuments previously established. First monuments are set along the range line, and finally the points on the north line of the township are made to fit the previously set points.
NUMBERING OF TOWNSHIPS

A series of adjacent townships running east and west is known as a tier. An adjacent series running north and south is known as a range. The tiers of townships are numbered consecutively, both to the north and south of the base line. The ranges of townships are likewise numbered, both to the east and west of the principal meridian. A township is designated by: The serial number of its tier and the letter N or S to indicate the position of the tier north or south of the baseline and the serial number of its range and the letter E or W to indicate the position of the range east or west of the principal meridian. Assuming that Figure 1 represents the start of the division along the San Bernadino Meridian, the cross-hatched township shown would be designated "Township 3 north, Range 2 west, of the San Bernadino Meridian." This would be abbreviated "T3N, R2W, S.B.M".

DIVISION OF A TOWNSHIP INTO SECTIONS

Each township is divided into sections, each having an area of approximately one square mile or 640 acres. Meridional section lines are initiated at the section corners which have been set at intervals of 80 chains (1 mile) along the south boundary of the township and are run from the south to the north boundary due north or parallel to the east boundary of the township. Quarter section and section corners are established alternately at intervals of 40 chains along the meridional section lines.

From the section corners so established, latitudinal section lines are run from west to east as random lines parallel to the south boundaries of the respective sections to the corresponding section corners on the next meridional section line (or township line) to the east. The falling on the objective corner is noted, and the true line established from east to west. These section lines will divide the township into 36 sections, approximately but never exactly square. All regular sections, will have theoretical dimensions of 80 chains on all four sides. In practical application of this plan, the accumulated error of measurement is placed in the last interval closing on the north and west boundary of the township.

The subdivision of a township into sections is similar in some respects to the subdivision of a quadrangle into townships; however, several major differences are evident. The division of a township begins with the line between sections 35 and 36, but this line is run on a true meridian or it is run parallel to the east boundary. At 80 chains, a random line parallel to the south township is run to the east township boundary. If it does not meet the previously established section corner between sections 25 and 36, the falling is measured and prorated back to the corner common to sections 25, 26, 35, and 36. are placed at intervals of 40