1103 FIELD BOOKS

1103-1 General

The preparation of field books and recording of field measurements are important parts of the survey operation. Keep in mind, these notes may serve as an official source document and basis of payment to the Contractor.

All field notes shall be recorded in standard field notebooks unless an electronic data collector is used. Never use loose-leaf books or pads for permanent records. Neatness and clarity are of utmost importance in the preparation of field notes. When preparing notes, provide sufficient detail and information to enable those who are not familiar with the project to easily understand what has been documented. Too much detail is far better than too little. Never crowd survey notes; paper is relatively cheap.

Errors made in recording field notes should never be erased. Draw a line through the erroneous figures and place the corrected figures directly above. When necessary to make revisions in notes, the abandoned notes should not be destroyed but crossed out and reference made as to the book number and pages where revisions appear. When corrections are made, the individual making these should date and initial each change.

Each book should have pages numbered only at the top of the right hand sheet and the contents indexed on the first page. The date, weather conditions, and survey crew personnel shall be shown at the beginning of each day's notes. The person in charge of making the survey or recording the measurements shall sign the end of each days notes and on each page containing the results of any measured item.

All construction records shall be plainly marked for identification with the contents, route, project number, stations, name of engineer, and year. They shall be turned into project records when complete.

Survey data may also be collected using an electronic data collector. When survey data is collected electronically, it should be turned into the Transportation Engineer Team Leader on the original diskette. It may also be appropriate to send a copy to CADD/Mapping. Refer to ADOT *Engineering Survey Services Manual for Field Surveys* for additional information.

1103-2 Transit Book

Before staking is started, and after checking of plans and control points, a transit book shall be prepared. A well-prepared transit book is a valuable tool to the staking party.

Avoid inadequate information caused by crowded notes. Leave sufficient room so that the survey party may record other pertinent information. An accepted method of listing information in the transit book is as follows:

Obtain from the plans the engineering station at the beginning of the project. This station number shall be inserted in the first column on a line near the bottom of the third or fourth left hand page from the front of the field notebook. Next, list the stationing up the page consecutively from the beginning station on about every fourth or fifth line. Then enter the station of all transit points shown on the plans, such as P.O.T. (point on tangent), P.I. (point at intersection), P.C. (point of curvature), P.T. (point of tangency), or in the event of spiraled curves, T.S. (tangent to spiral), S.C. (spiral to curve), C.S. (curve to spiral), S.T. (spiral to tangent), and alignment equations at the proper place in the book according to station number. After all stationing and control points are in the book, enter all basic information pertaining to the main curve and spirals on the left hand page, opposite the P.I. station of the main curve. The right hand page shall be used to diagram any

reference ties opposite the appropriate station of the left hand page. The centerline station of any structure, right-of-way marker or other tie should be indicated in the book in order that these points may be established as the line is being run. Compute all curve deflections and notes just to the right of the station to which they apply. The first chord of the curve or spiral shall be the distance from the P.C. or T.S. station to the first even station or plus 50 feet (15 meter) station. Curves shall be computed using chords with a maximum of 50 feet (15 meters) in length. Any curve greater than 6 degrees shall be run with 25 foot (7.5 meter) chords or shall be run using 50 foot (15 meter) chords with the necessary chord correction applied. These corrections may be obtained from most survey texts.

1103-3 Grade Book

The grade book is prepared in order that the survey party may readily provide the Contractor with the necessary construction grades to properly construct to the requirements of the plans.

This book shall contain all computed and checked grades necessary to provide elevations for crosssectioning, staking of structures, blue topping, and any other elevations necessary to complete the project. Centerline ground elevations should also be shown.

Grade elevations should be computed along the roadway centerline at a maximum of 50 foot (15 meter) intervals and recorded in the grade book. Grades should also be computed and recorded at intermediate stations necessary to facilitate the staking of structures and at other breaks necessary in cross-sectioning.

The type of design relative to your project can be readily obtained from the typical sections shown on the project plans. All points of change in transverse crown, slope or super-elevation, as indicated on the typical sections, should be recorded in the grade book.

Extensive checking of vertical alignment, including vertical curves, should be done before the grade book is prepared.

Begin at top of page three (3) at the left hand side, with the station of the first grade break back of the beginning of the project and enter all stations and plus 50 foot (15 meter) stations down the page, leaving one space between each entry. In the column just right of the stationing enter the vertical curve data, such as length of curve, percent of grade, beginning and end of curve and indicate P.I. of vertical curve. In the third column enter the tangent grade elevation as computed from the plans.

The fourth column is reserved for the computations of the vertical curve corrections for each station in the curve. Column five will contain finished grade elevation which is the tangent grade plus or minus the vertical curve correction. Column six will indicate the subgrade elevation. This elevation is the finished grade elevation minus thickness of base and surfacing material. Base and surfacing material thickness changes may also be noted in this column.

The right hand side of the book shall contain rate of super-elevation as indicated on plans, beginning and end of transitions or super-elevations, rate of crown or slope and any other information necessary in staking a project.