

CHAPTER 1

GENERAL

Chapter Contents

Sec. 1.01	<u>Legal Status Of The Survey</u>
Sec. 1.02	<u>Authorization Of Surveys</u>
Sec. 1.03	<u>Working Hours</u>
Sec. 1.04	<u>Daily Diary</u>
Sec. 1.05	<u>Refuse Disposal</u>
Sec. 1.06	<u>Specifications And Standards</u>
Sec. 1.07	<u>Accuracy Of Surveys</u>
Sec. 1.08	<u>Submission Of Completed Of Surveys</u>
Sec. 1.09	<u>Safety</u>
Sec. 1.10	<u>Outside Requests For Survey Information</u>

Sec. 1.01 **Legal Status of the Survey**

The State Highway Commissioner is authorized by the Revised Code of Virginia §33.1-94 ([see Figure 1-A](#)) to make surveys for highway purposes. The code states, "The State Highway Commissioner, through his duly authorized officers, agents, or servants, may enter upon any land in the Commonwealth for the purposes of making examination and survey thereof, with a view to ascertainment of its suitability for highway purposes, or for any other purpose incidental thereto. Such officers, agents, or servants shall exercise care to protect any improvements, growing crops, or timber in making such examination or survey."

This authority should never be used arbitrarily, but should be thoroughly tempered with proper respect for private property and for the rights and feelings of the individual.

Sec. 1.02 **Authorization of Surveys**

All surveys for highways on all systems, including closed surveys for determination of ownership or for purchase, are to be authorized by the State Location and Design Engineer or his representative. This authorization will be in the form of a memorandum in which the scope of the project, length, type of survey required and any other pertinent data will be outlined. Supplemental data, made available to assist in performing the survey, will be furnished also.

Supplemental survey data, or information, shall include but is not limited to: National Geodetic Survey (NGS) field survey control, both horizontal and vertical, U.S. Geological Survey topographic maps, photographs of the area, existing road plans, and prints of adjacent projects in the planning stage. As schedules permit, the Global Positioning System, as initiated by the District Survey Engineer, shall be used to provide field survey control to the project based upon published government control.

After the location approval by the Commonwealth Transportation Board and the Federal Highway Administration, survey authorization for Interstates will be made in accordance with tentative construction schedules. Survey authorization for Principal-Minor Arterial System projects will be made in accordance with established construction or planning schedules. Prior approval must be given by the Federal Highway Administration on projects where Federal-Aid for preliminary engineering is requested.

Survey authorization for the Secondary System (Arterial-Collector-Local Roads) will be made when requested by the Secondary Roads Division, in accordance with planning schedules and the Secondary System Contract Advertisement Schedule.

The Program/Project Management System (PPMS) is an on-line computer system operated through various programs maintained by VDOT's Information Technology Division (ITD) and the Commonwealth's Department of Information Technology (DIT). It provides direct managerial information on a large number of projects to 12 of the 20+ divisions of the Department, including the Central Office and all 9 Districts and their Residencies.

The two main goals of PPMS are:

- To assist managers in developing realistic and feasible work programs and schedules that are in reasonable balance with resources currently and expected to be available; and
- To assist managers in completing the work in accordance with approved programs and schedules.

Once a project is authorized to begin, the appropriate starting date must be entered in the PPMS database. All VDOT Survey Managers are responsible for the maintenance of starting and ending dates for the each of the survey-related PPMS codes that relate to each project. Please refer to [Figure 1-B](#) for all current survey-related codes and their descriptions.

The Department's policy is not to re-establish right-of-way lines for adjacent property owners or anyone else unless it is to serve the Department's needs. The Department will, however, assist others, such as property owners, engineers or surveyors in establishing right-of-way by providing plans and other available information. The surveying necessary to re-establish the lines is the responsibility of the one having the need for such information.

Section §33.1-222 ([see Figure 1-C](#)) of the Code of Virginia states that the Department is prohibited from making surveys for municipalities except in connection with highway projects or the establishment of right-of-way or street lines. Please refer all inquiries for work of this type to the State Location and Design Engineer.

All survey work performed by anyone other than members of the survey party must be supervised and checked by the District Survey Parties Engineer. This survey work includes and is not limited to any right-of-way stakeout, metes and bounds surveys, construction stakeout, etc., performed by inspectors in the Residencies. Previous experience in surveying does not eliminate the need for supervision and checking by the District Survey Parties Engineer.

Sec. 1.03 **Working Hours**

Unless otherwise approved by the District Administrator, normal VDOT survey personnel working hours are from 8:00 a.m. to 4:30 p.m., including one-half hour for lunch. These working hours may vary and be dependent upon extenuating circumstances in certain areas of the state. An example might be that survey personnel may be forbidden to work within the interstate right-of-way during rush hour traffic according to District policy for safety considerations.

The Survey Supervisor shall leave at the office in which he has his headquarters a note as to where he and the survey party will be working each day.

Sec. 1.04 Daily Diary

A complete diary, which shall be kept by the Survey Supervisor, should indicate the activities of all members of the party and the type and amount of work accomplished by the party. The diary will be checked frequently by the District Survey Parties Engineer to insure completeness and accuracy.

Sec. 1.05 Refuse Disposal

It is the responsibility of the person in charge of the party to see that the grounds are cleaned up after lunch and all refuse is disposed of, whether on private property or on the State's right-of-way. Under no circumstances shall the survey personnel leave waste paper or any miscellaneous debris on any job.

Sec. 1.06 Specifications and Standards

Each party will be furnished, according to its needs, one or more copies of the Road and Bridge Specifications, Road Designs and Standards, the Construction Manual, and Post Construction Operations Manual, and revisions or errata for same as they are issued. These will be charged to the Survey Supervisor and every member of the party must become familiar with the contents. Of particular importance should be the specifications covering the type of road for which the survey is being performed. Other standard plans, such as minor drainage structures and revisions thereto, will be issued from time to time as deemed necessary.

Sec. 1.07 Accuracy of Surveys

All Survey topographic information must comply with the *Model Virginia Map Accuracy Standards* and the *National Map Standards* for the scale of mapping. These standards are attached as [Appendix C](#). Control and Right of Way surveying is to comply with all applicable requirements of the latest edition of the Virginia Board for Architects, Professional Engineers, Land Surveyors, Certified Interior Designers and Landscape Architects regulations.

Sec. 1.08 Submission of Completed of Surveys

Submission of location survey projects that are to be designed in the district shall be as follows. After all field work has been finished as outlined in [Chapter 4](#) of this manual and the processing and final quality control checking have been completed, the designer shall be notified and all necessary files shall be stored on the server through the Falcon Document Management System. A copy of all survey, utility, DTM, contour, and all updated files shall be sent to the central office survey server as prescribed by the State Survey and Photogrammetry Program Manager's office for evaluation and archival. The District Survey Manager shall update activity 31S in the PPMS system for all projects surveyed by VDOT staff.

For location survey projects that are to be designed in the Central Office or by Consultants, the following procedure is to be used. After all field work has been completed as outlined in Chapter 4.00 and the processing and final quality control checking have been completed, a copy of all survey, utility, DTM, contour, and all updated files are to be stored on the central office survey server as prescribed by the State Survey and Photogrammetry Program Manager's office for evaluation and archival. A transmittal letter or an e-mail shall be sent to the State Survey and Photogrammetry Program Manager's office with a copy to the Assistant State Location and Design Engineer notifying them of the completion of the survey and location of the files. The notification is to contain all data previously listed.

For bridge site plan projects to be designed in the central office or by consultants the following procedure is to be used. After all field work has been completed as outlined in Chapter 4.00 and the processing and final quality control checking are finished, a copy of all survey, utility, DTM, contour, and all updated files are to be stored on the central office survey server as prescribed by the State Survey and Photogrammetry Program Manager's office for evaluation and archival. A transmittal letter or an e-mail shall be sent to the State Survey and Photogrammetry Program Manager's office with a copy to State Bridge Engineer's office and the Assistant State Location and Design Engineer's office notifying them of the completion of the survey and location of the files. The notification is to contain all data previously listed.

For bridge projects to be designed in the district the following procedure is to be followed. After the completion of all field work as outlined in [Chapter 4](#) of this manual and the processing and final quality control checking have been completed, all necessary files shall be stored on the server through the Falcon Document Management System. The bridge engineer in charge of the project and if applicable the L&D designer, shall be notified by a transmittal letter or an e-mail notifying them of the completion of the survey and location of the files. The District Survey Manager shall update activity 31S in the PPMS system for all projects surveyed by VDOT staff as necessary.

For surveys in which all data has been secured except the utility designation, the survey shall not be shown complete nor shall the element for the Human Resources Planning System be closed out until the utility designation is complete.

Sec. 1.09 **Safety**

All survey activities shall be governed by guidelines and instructions as issued by the State Traffic Engineer and the State Safety and Health Engineer. All survey personnel should be very familiar with and aware of the guidelines as specified in VDOT's "Virginia Work Area Protection Manual" and VDOT's "Work Zone Safety Guidelines for Temporary Traffic Control". All survey personnel, who will be in the roadway and are responsible for directing traffic in the work zone, shall have successfully completed and shall be certified as a flagman through VDOT's Flagging Certification Program. All survey personnel who are required to enter confined spaces (i.e. manholes, utility vaults, etc.) shall be certified through VDOT's Confined Space Certification Program. Any questions or information requests regarding VDOT's Certification Programs should be directed to the State Safety and Health Engineer.

Sec. 1.10 **Outside Requests for Information**

Time will not permit the practice of doing the necessary research and printing of information for people outside VDOT. If a person would like to come to the appropriate office and copy the data himself, this would be satisfactory. If the information is on an approved plan sheet(s), it will be satisfactory to sell him a print of the plan sheet. This will apply to horizontal control, vertical control and other survey information.

National Geodetic Survey (formerly U.S.C.& G.S.) data can be acquired from: The Director, National Geodetic Survey, 1315 East-West Highway, Silver Spring, Maryland 20910, or by visiting the NGS web site and using the searchable database for datasheet retrieval at <http://www.ngs.noaa.gov/> .

Please refer to [Figure 1-C](#) in this chapter for requests from government agencies.

Figure 1-A

§ 33.1-94. Right to enter on land to ascertain its suitability for highway purposes; damage resulting from such entry.

The Commonwealth Transportation Commissioner, through his duly authorized officers, agents, or servants, may enter upon any land in the Commonwealth for the purposes of making examination and survey thereof, with a view to ascertainment of its suitability for highway purposes, or for any other purpose incidental thereto. Such officers, agents, or servants shall exercise care to protect any improvements, growing crops, or timber in making such examination or survey.

In the event that the Commissioner and any landowner affected cannot agree as to the amount of damage, if any, sustained by reason of the entry upon land for the purposes herein stated, the Commissioner shall institute condemnation proceedings, as hereinafter provided in this chapter, for the purpose of determining the amount of such damage, if any.

Figure 1-B

Program/Project Management System (PPMS) Activity Codes

- 12 AUTHORIZE PE
Involves authorizing the expenditure of funds for preliminary engineering. Includes obtaining FHWA authorization on federal-aid projects.
- Interstate, Primary & Urban Projects*
- Responsibility:** Programming and Scheduling Division (Interstate and Primary Systems), Urban Division (Urban Systems). **Begins:** When request is received for PE to be authorized. **Ends:** When PE is authorized and proper divisions are notified. **Norms:** 1 Month.
- Secondary Projects*
- Responsibility:** Secondary Roads Division (Secondary Systems). **Begins:** When they receive the County budget. **Ends:** When the County Budget is reviewed, approved, and submitted to Fiscal Division, and PE for the individual project is open to charges.
- NOTE:** On those few Secondary projects which involve Federal funding in PE, the end date of Activity 12 would be when FHWA authorizes PE.
- Norms:** 2 ½ months.
- 22S DEV AERIAL PHOTO/MAPPING
Involves property research and preparing property owner letters; establishing alignment, collecting topography, DTM data, or cross sections; plans base preparation. **Responsibility:** Location and Design Division, Survey Section **Begins:** On approval of Six Year Plan, or special request. (After Activity 12 ends - Feb-Mar-Apr Only) **Ends:** When film has been processed and edited.
- 31S CONDUCT LOCATION SURVEY
Involves property research and preparing property owners letters; establishing alignment, collecting topography, DTM data, or cross sections; plan base preparation. **Responsibility:** Location and Design Division, Survey Section **Begins:** When the survey is authorized. **Ends:** When survey is completed and all data, including cross sections/DTM's and utilities designations are transmitted to the Location & Design Manager.
- Norms:** 6 - 8 Months.
- 37S MAJOR STRUC/BRIDGE SURVEY
Involves establishing alignment, collecting topography, DTM data or contours, cross-sections; plan base preparation. **Responsibility:** Location and Design Division, Survey. **Begins:** As established during scoping or as requested by bridge engineer. (When Activity 31S ends) **Ends:** When all data has been collected and transmitted to appropriate bridge engineer. (1 month prior to end of Activity 46C/D)
- NOTE:** This activity is not automatically scheduled. It is added by request only.
- 56S SURVEY COMPENSATORY MITIGATION

Involves site survey, control and mapping for conceptual, preliminary and final plans for wetland/stream mitigation compensation sites for projects. **Responsibility:** Location and Design Division, Survey Section. **Begins:** Automatically scheduled when activity 56 is activated. **Ends:** When activity 56 ends.

Norms: 15 months. Dependent on activity 56. Activity 56 time frames will be utilized.

SURVEY REQUIREMENTS

Wetland mitigation surveys will conform to the current APELSCIDLA Board regulations as cited in the following:

18 VAC 10-20-370 "Minimum standards and procedures for land boundary survey practice"

18 VAC 10-20-390 "Geodetic Surveys"

DTM and contour survey (if requested). Location of swamps, marshes, ponds, streams, springs, rivers, physical objects, etc. (if requested) with survey ties to the external boundary of the parcel being surveyed. Use the same coordinate system of the adjoining or adjacent VDOT project. Plus and offset corner information shown on plat for all adjoining corners which abut a VDOT project. Use RM-2 monumentation for all boundary corners, unless RM-1-monuments are more practical. Provide at least one corner as a permanent bench mark. This corner to have a flat brass disc set in concrete with the following:

Punch mark at the corner point. Horizontal coordinates of corner point. Elevation and datum of corner point

57S RIGHT OF WAY STAKEOUT SURVEY

Involves establishing /re-establishing alignment, marking rights of way, construction and drainage easements. **Responsibility:** Location and Design Division, Survey Section. **Begins:** Upon receipt from R/W Section. (2 weeks into Activity 51) **Ends:** When request is satisfactorily completed. (Middle of 69C/D)

70S UTILITY STAKEOUT – SURVEY

Involves establishing/re-establishing alignment, marking utility easements. **Responsibility:** Location and Design Division, Survey Section or Contractor's Surveyors. **Begins:** When requested by Right of Way Division. (2 weeks into Activity 51). **Ends:** When request is satisfactorily completed. (Middle of Activity 67C/D)

77S

CONSTRUCTION SURVEY

Involves setting slope stakes, grade hubs, moving control markers as needed.

Responsibility: Location and Design Division, Survey Section or contractor's surveyors.

Begins: When project is Awarded. (2 months after the end of Activity 80). **Ends:**

When project is accepted as completed by the Department. (6 months later)

NOTE: This activity is not automatically scheduled. It is added by request only.

Figure 1-C

§ 33.1-222 Maps or plats prepared at request and expense of local governing bodies and other groups; Department of Mines, Minerals and Energy to seek other existing sources.

The Commonwealth Transportation Commissioner is hereby authorized in his discretion to have prepared photogrammetric maps or plats of specific sites or areas at the request of the governing bodies of counties, cities and towns of this Commonwealth, local nonprofit industrial development agencies, planning district commissions, soil and water conservation districts, metropolitan planning organizations, public service authorities and local chambers of commerce. The request shall have been first reviewed by the Department of Mines, Minerals, and Energy to determine whether suitable or alternate maps or plats are currently available, and the governing body, agency or chamber must agree to reimburse the Department of Transportation for the cost of producing the maps or plats.