

# CHAPTER 1

## GENERAL

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

The State Highway Commissioner is authorized by the Revised Code of Virginia **§33.2-1011. (Effective October 1, 2014)** ([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 and Assignment of Surveys**

#### *Sec. 1.02.1* Authorization

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 integrated Project Manager (iPM) provides a central management system for project development information. In addition to basic location and status information, iPM also includes division-specific comments, project contacts, project documents, meeting dates, project schedule, and action items. 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 IPM 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 IPM database. All VDOT District Survey Managers are responsible for the maintenance of starting and ending dates for each of the survey-related IPM 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 §33.2-236(see [Figure 1-C](#)) 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 Commissioner of Highways may prepare photogrammetric maps or plats of specific sites or areas at the request of the governing bodies of localities of the 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 Department of Mines, Minerals and Energy shall first review the request to determine whether suitable or alternate maps or plats are currently available, and the local governing body, agency, or chamber shall agree to reimburse the Department of Transportation for the cost of producing the maps or plats.**

#### *Sec. 1.02.2 Survey Assignments*

Upon receipt of a survey authorization, the District Survey Manager will assign the project to a Survey Party Manager (Land Surveyor) in the district or Consultant staff. During the progress of the survey, the District Survey Manager will review the work for conformance with current instructions and ascertain that the survey data is complete and covers the proposed project.

### Sec. 1.02.3 Consultant Assignments\*

VDOT has Survey and SUE primes consultants available for obtaining services in the surveying and subsurface utility engineering fields. These services are requested through task assignments. Each consultant is responsible for obtaining Falcon Access for each task assignment. The task assignment process is outlined below.

**[Represents communication protocol to be used]**

- Use the UPC first in the subject line of the email.

1. Assignments are initiated at the district or CO level by the Project Manager or other personnel and sent to the District Survey Manager or State Survey Program Manager (CO). **[LD forms and email]**
2. The District Survey Manager will contact the State Survey Program Manager with the project information so a prime can be assigned. Information includes: scope of work, UPC#, activity code, Agency One Use code, PM name and contact number, due date, and notice if any consultants have already been on the job. If aerial photography is necessary, the State Photogrammetrist will be contacted prior to assignment to a consultant. **[email]**
3. The State Survey Program Manager will assign a prime to the task based on the information provided by the district that best fits the Departments business needs. Consultants that have prior involvement on the job will be reassigned to the job when available. **[email ]** {Time to return:} <=1 business day in general.
4. The District Survey Manager will contact the Prime assigned for an estimate based on the scope information. **[email ]**
5. The Prime will complete an estimate based on the information provided. The following items should be included in the final estimate: {Time to return:} 5 days by contract
  - a. Narrative letter – includes a detailed scope, VDOT responsibilities (if any), contract MOA date with term, schedule, and deliverables.
  - b. Distribution of Man-hours in spreadsheet format –
  - c. Fee Calculation work sheet – Limit to 1 page.
  - d. Project limits provided by the Department –Sketches, maps, written documentation
  - e. Attachments – Should be used for sub consultant’s services.
  - f. Any additional documentation if relevant to the task.
6. Prime submits copy of estimate to the District Survey Manager. The State Survey Program Manager will be cc’d with all correspondence. **[email]** Do not send color files unless Department requests.
7. District Survey Manager is responsible for reviewing and obtaining the Project Managers notice to proceed (NTP). NTP will be forwarded to the State Survey Program Manager. Project Managers will provide an open activity for the task assignment and must keep it open for the duration of the work. **[email]**

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8. State Survey Program Manager is responsible for reviewing and giving final NTP to the Consultant.

a. NTP will be given by email first. **[email]**

b. A formal letter will be provided by US mail service to the Consultant. **[letter]**

9. Consultant will track each task request and provide reports to the Department as requested. **[email]**

10. If NTP is not received by the Consultant within 2 weeks of submittal, the Consultant will email CO and the District requesting the status of the assignment. **[email]**

11. District Survey Managers will review the work for conformance with task request and meets the requirements outlined in the Survey Manual. District Survey Manager will notify the consultant and CC the State Survey Program Manager that the task has been completed ,reviewed, and submitted per Sec. 1.08 so the task assignment can be closed.**[email]**\*

### *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 Party Manager (Land Surveyor) 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.

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#### *Sec. 1.04* **Daily Diary**

A complete diary, which shall be kept by the Survey Party Manager (Land Surveyor), 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 Manager 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 Party Manager (Land Surveyor) 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**

All GPS control "subject data" for VDOT surveys (either primary control or photogrammetric control) shall be delivered to VDOT's Geodetic Surveys Engineer for a quality control check and evaluation. This information will be delivered to the Geodetic Surveys Engineer immediately after completion of the primary control (deliverables are in Section 10.06).

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\* Rev. 3/14

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 appropriate Falcon Document Management server.

The District Survey Manager shall update activity 31S in the IPM system for all projects surveyed by VDOT staff.

A transmittal letter or an e-mail shall be sent to the individuals listed below and CC'd to State Survey Program Manager and Assistant State Location and Design Engineer's offices notifying them of the completion of the survey and location of the files:

**Projects designed in District:** Stored on district server. Transmittal or email to designer and project manager.

**Projects designed in Central Office or by Consultants:** Stored on central office server. Transmittal or email to project manager and designer.

**Bridge projects designed in Central Office or by Consultants:** Stored on central office server. Transmittal or email to State Bridge Engineer's office.

**Bridge projects designed in District:** Stored on district server. Transmittal or email to the bridge engineer in charge of the project, and if applicable, the L&D designer. \*

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.

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\* Rev. 3/14

### *Sec. 1.10* **Outside Requests for Information**

As time permits, the District or Central Office staff may provide approved roadway or right of way plans for land surveying professionals outside VDOT when requested by phone, mail, or email at their discretion. 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. If a person would like to come to the appropriate office and copy the data himself, this would be satisfactory.

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**

**§ 33.2-1011. (Effective October 1, 2014) Right to enter on land to ascertain its suitability for highway and other transportation purposes; damage resulting from such entry.**

**A. The Commissioner of Highways, through his duly authorized officers, agents, or employees, may enter upon any land in the Commonwealth for the purposes of making examination and survey thereof, including photographing; testing, including soil borings or testing for contamination; making appraisals; and taking such actions as may be necessary or desirable to determine its suitability for highway and other transportation 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.**

**B. Notice shall be sent to the owner by mail, at the address recorded in the tax records, not less than 15 days prior to the first date of the proposed entry. Notice of intent to enter shall be deemed made on the date of mailing.**

**C. The notice shall include the anticipated date such entry is proposed to be made and the purpose of such entry. Any entry authorized by this section shall be for the purposes of making examination and survey thereof, including photographing; testing, including soil borings or testing for contamination; making appraisals; and taking such other actions as may be necessary or desirable to determine the suitability of such property for highway and transportation purposes, and shall not be deemed a trespass.**

**D. Notwithstanding the provisions in subsections A and B, nothing shall preclude entry prior to the anticipated date of entry specified in the notice if the property owner or his designated representative agrees to or requests a date of entry prior to the date of entry specified in the notice.**

**E. The Commissioner of Highways, through his duly authorized officers, agents, or servants, shall make reimbursement for any actual damages to real or personal property resulting from entry upon the property. In any action filed under this section, the court may award the owner his reasonable attorney fees, court costs, and fees for no more than three expert witnesses testifying at trial if (i) the court finds that the Commissioner of Highways maliciously, willfully, or recklessly damaged the owner's property and (ii) the court awards the owner actual damages in an amount 30 percent or more greater than the final written offer of the Commissioner of Highways made no later than 30 days after the filing of an answer in circuit court or the return date in general district court. A proceeding under this subsection shall not preclude the owner from pursuing any additional remedies available to the landowner.**

**(Code 1950, § 33-57.2; 1960, c. 491; 1970, c. 322, § 33.1-94; 2007, c. 755; 2011, c. 60; 2014, c. 805.)**

## Figure 1-B

### Program/Project Management System (IPM) 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 the 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

**§ 33.2-236. (Effective October 1, 2014) 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 Commissioner of Highways may prepare photogrammetric maps or plats of specific sites or areas at the request of the governing bodies of localities of the 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 Department of Mines, Minerals and Energy shall first review the request to determine whether suitable or alternate maps or plats are currently available, and the local governing body, agency, or chamber shall agree to reimburse the Department of Transportation for the cost of producing the maps or plats. (Code 1950, § 33-136.2; 1962, c. 96; 1970, c. 322, § [33.1-222](#); 1982, c. 184; 1984, c. 590; 2014, c. [805](#).)**