

## 1-01 General

Survey teams in the Washington State Department of Transportation (WSDOT) are comprised of office and field personnel. Survey teams perform many important functions.

- Take part in review projects in scoping phase
- Determine survey requirements
- Take part in presurvey conferences
- Survey records research and review
- Evaluate control and monumentation
- Reconnaissance
- Mathematical modeling of Survey Records
- Field work
- Analysis of field and modeled data
- Prepare Survey Maps (work maps, exhibit maps, Monumentation Maps, Record of Surveys, ...)

All this is done to an appropriate level of accuracy for efficient utilization of time, manpower, and equipment.

Survey team members regularly review the following publications:

- Highway Engineering Field Formulas (M 22-24)
- Highway Surveying Manual (M 22-97)
- Design Manual (M 22-01)
- Construction Manual (M 41-01)
- Standard Specifications (M 41-10)
- Standard Plans (M 21-01)
- Contract plans and specifications
- WA state law pertaining to surveying

A Survey Team Leader directs the Survey Party Chiefs. The Survey Team Leader will provide management, oversight and is an integral part of the quality assurance and quality checking process for all survey data. The team leader will provide assurance to the Project Engineer that land surveying work is done in compliance with RCW 58.09, WAC 332-130. A portion of the survey team is the field survey crew. The field survey crew varies in the number of members, but generally consists of a party chief, instrument operator, and a rod person.

## **Survey Team**

The party chief shall have extensive experience on a survey crew and is the person who supervises the crew. The party chief directs the crew, does the planning on how to complete the day's assignment, and usually records the work. The party chief also is required to complete the proper safety training as outlined in Chapter 2 of this manual. The party chief reports to the project engineer or the project engineer's delegate. The delegate would be the assistant project engineer, the chief of parties, or the project inspector.

The instrument operator, appointed by the party chief is responsible for the efficient setup and operation of all the survey instruments. The instrument operator, in the temporary absence of the party chief, directs the crews' activities. Other considerations should be made when the party chief is absent for an extensive period of time.

The other member(s) of the crew are survey team members who are generally less experienced, but willing to learn. Their duties are to set up signs and control the traffic, make measurements with a tape or chain, set up reflector prisms on tripods or staffs, hold the leveling rod, and performs other tasks as directed by the party chief.

In addition to the individual duties of each member, the survey field crew is required to document daily survey activities for project records. Documentation may be in the form of a Daily Diary or a Survey Field Book. Basic entries include the date, names of the crewmembers, weather, equipment, work order number, and a brief description of the job request, point number and H.I. information for all instrument setups and backsights.

All members of the crew are required to pass the WSDOT Basic Survey Training Course. Whenever possible, the party chief should rotate the duties of the crewmembers so that each receives varied training and experience. This is to everyone's benefit and professional growth.

## **1-02 Responsibilities**

### **1-02.1 Responsibilities to the Public**

The public sees WSDOT survey teams as representatives of the department. They are knowledgeable concerning the department's policies and the project at hand. They answer inquiries and requests honestly, openly, and accurately; assuring that the department is well represented. Courtesy, patience, attentive listening, accuracy, truthfulness, and driving practices are all responsibilities of the survey team when in the public eye as a representative of the department and the state.

### **1-02.2 Responsibilities to the Contractor**

On a construction project, the team typically reports to the project inspector or chief of parties or the project engineer's delegate. Section 1-05 of the Standard Specifications basically states that the engineer will set stakes one time and that the contractor will provide safe and sufficient facilities for setting points and elevations. The timing of contractor requests for stakes is addressed in the *Standard Specifications*. Identify all stakes as provided in Chapter 15, Construction Survey Procedures.

### 1-02.3 *Relations with Other Departments and Agencies*

There are several state laws having to do with the relationship between WSDOT and other agencies as regards surveying activities. State law requires that a permit be obtained from DNR before any existing monument may be disturbed. WSDOT surveyors must, as required by state law, provide survey information to either to the county engineer or auditor. Chapter 16 of this manual, and Chapters 1440 and 1450 of the *Design Manual*, describes these requirements in detail.

The Department of Natural Resources (DNR) maintains a public record of the surveys performed in the state of Washington. WSDOT Geographic Services maintains a web based database of Geodetic Control.

### 1-02.4 *Right of Entry*

According to RCW 47.01.170 the Department of Transportation has a right to enter upon public or private property for specific purposes. It states in part “The department or its duly authorized and acting assistants, agent, or appointees have the right to enter upon any land, real estate, or premises in this State, whether public or private, for the purposes of making examinations, location, surveys, and appraisals for highway purposes. The making of any such entry for those purposes does not constitute any trespass by the department or by its duly authorized and acting assistant, agents, or appointees.”

Employees entering onto private property should use good judgment and display respect for the owner’s property, such as:

- a) Littering is **NOT** allowed. Obtain permission before setting any survey points, aerial targets, etc. Always remember to clean up the site after the project is complete. (Picking up aerial targets, etc.) In some states it is considered littering leaving a hub and tack. Getting permission from the owners also ensures a much longer life span of the survey marker left on their property.
- b) When entering planted fields, seek permission for vehicular use and acceptable routes of travel to minimize crop damage. Try to use the same tire tracks when leaving.
- c) A rule of thumb for gates: **Leave them as you found them.** When passing through a gate, if it is shut, always make sure it is shut again after you have passed through it. Ranchers are not “happy campers” with surveyors who leave a gate open and allow the livestock to roam freely.
- d) Out of consideration of being neighbors, it is recommended that the Real Estate Services Department or the Project Engineers office send a notice of entry to specific parcels of interest, at a minimum, stating when a survey crew will be in the area. The notice of entry would not be contingent upon prior notice to the owner or tenant, but would specify that notice of the proposed time of entry shall be given to the owner or tenant where practicable. Stopping by the house or office of a parcel, before entering, to gain permission will improve public relations and provides the owner or tenant the opportunity to provide areas of access and areas to avoid.

