

### **SECTION 43-LOCATION RECONNAISSANCE**

0912. Air reconnaissance. Routes lying in enemy territory must be reconnoitered from the air before troops are committed, and air reconnaissance may also be very valuable in checking deduction made during the preliminary investigation (see Section 42).

The reliability of visual reconnaissance depends upon the training and experience of the observer.

0913. The technical point. In both hasty and deliberate ground reconnaissance the method of construction should be considered. Sources be sought to enable earth-moving plant to reach high ruling points quickly, so that dozers etc, can work downhill.

#### **Hasty Reconnaissance**

0914. In very hasty work on technical routes, reconnaissance and setting out may have to be combined (see Section 49). When time permits all potential routes should be reconnoitered, even if this entails sending out a separate party to each, so as to determine which route can most easily and rapidly be constructed. Some alternatives can often be eliminated by observation from a good view-point or by checking gradients between ruling points by long shots with a hand level.

0915. Subject to operational demands, hasty location is governed by:

- a. The effort required for earthwork. This depends upon the nature of the soil as well as upon the volume to be moved. The type and capacity of available plant govern what is and what is not possible.
- b. Drainage. This affects mainly the lasting qualities of the road. Its immediate importance depends upon climate conditions, and for hasty work excavation and structures may have to be severely restricted. The prevention of serious washouts or subsidence is essential.
- c. Soil characteristics. These are of particular importance in hasty work, as a stable sub grade may need little work to render the route suitable for temporary use.

**Deliberate Reconnaissance**

0916. Deliberate reconnaissance is a slow process, involving comparison of the possible alternative followed by a detailed study of the selected route.

The initial selection can usually be made after a fairly hasty reconnaissance to examine the limiting factors and the bad sections on each route.

0917. The detailed study of the selected route must include investigation of all valleys and watercourses and of all obstacles such as steep grades and swampy areas. The following information must be obtained:

- a. Estimated gradients, especially those between the ruling and maximum gradients laid down.
- b. Details of unavoidable sharp bends.
- c. Particulars of bridge sites, including width, depth, and velocity of stream, nature of banks and stream-bed, high water mark, or flood level.
- d. Estimated number of culverts and structures, by sizes and types.
- e. Approximate soil classification by field tests, along the route. More detailed soil survey may be necessary (see RESPB No. 5D, Chapter2).
- f. Estimates of clearing work, by types.
- g. Estimates of earthwork quantities, aiming at balancing cut all fill and specifying borrow pit areas and haul lengths.
- h. Estimates of local construction materials, specially stone and timber. Lack of local resources should be reported.
- j. Local information about flood levels, rainfall, snow cover, liability of streams to sudden spate etc.

**Reconnaissance Map**

0918. The reconnaissance map is a measure of the value of a location reconnaissance. A sketch map at least is essential even in the most hasty work.

0919. **Practical Mapping**

a. **General method.** Whenever possible the map should be based on a series of compass traverses, covering both the proposed route and any lateral journeys a long features and obstacles. Compass bearings, distances, and barometer readings should be noted. Cross bearings to salient features should be taken.

b. **Scale.** A scale of about 2 inches to the mile is usually suitable.

c. **Distance.** Estimate either by rough measurement or by time taken to travel. A pedometer is useful, but the best hasty method is to use a wheel with a cyclometer. Walking time is very inaccurate: but the pace of riding animals is very regular.

d. **Heights.** Contours can be plotted from calculations based on readings with a hand level or clinometers, but the work will be much quicker and easier if a framework of spot heights can be produce by direct height readings. For this purpose a compensated aneroid barometer can be used. Readings should be taken at least every mile, and more frequently in broken country, and they are particularly important att the tops of ridges and bottoms of valleys. All readings should be timed and should later be related to those of a stationary barometer read at hourly intervals.

e. **Slopes.** Slopes should be measured by hand level. Readings should be taken of the general slope from ridge to valley, at all appreciable changes of gradient, and of the degree of side slope. Table 3.5 may be used to convert angles to gradients.

f. **Plotting.** Plotting should be done in the field and notes should be incorporated in the report, relating to reference numbers shown on the map.

**The Road Project**

0920. The location reconnaissance forms the basis of the written project which should normally comprise:

- a. Cover sheet.
- b. List of contents.
- c. Authority for the project.
- d. The body of the report, comprising:
  - (1) Part 1 - the summary.
  - (2) Part 2 - the main text.
  - (3) Appendices.
  - (4) Site plan or map, sections and elevations.