



SURVEYS AND MAPPING BRANCH
DEPARTMENT OF LANDS AND FORESTS

December 19, 1955
VICTORIA, B.C.

CIRCULAR LETTER TO ALL B.C. LAND SURVEYORS

Sir:-

re Instructions Regarding the Legal
Survey of Highway Rights-of-way (1953).

Two and a half years have now passed since the issuance of the above noted Instructions, providing an opportunity to test their practicability through three field seasons.

Variations have appeared in plans prepared under these instructions in respect to the treatment of old roads, in some of which unnecessary precision has been applied to the locating of old unsurveyed roads.

With a view to instituting a more standard plan and eliminating all superfluous detail, the accompanying supplementary notes have been prepared. They have been standardized to incorporate as closely as possible valuable suggestions from the Surveyors in the Land Registry Offices, from the Right-of-Way Agent Department of Highways, and from Land Surveyors engaged in Highway surveying.

A copy of the Supplementary Instructions is attached hereto. They will become effective on April 1st, 1956, but are recommended for immediate use on surveys for which the plans have not yet been prepared.

Yours very truly,

"G. S. Andrews"

Surveyor General.

WAT:KW

SUPPLEMENTARY INSTRUCTIONS REGARDING THE LEGAL SURVEY OF
HIGHWAY RIGHTS-OF-WAY

BOOK OF REFERENCE

1. Where, due to the right-of-way passing through a large number of lots or parcels, the title of the plan would be unduly lengthy, the lot and parcel numbers shall be omitted from the title and only a general indication of locality given therein. e.g. In the case of a highway with recognized mileages, the inclusion in the title of "From Mile -- to Mile --", in conjunction with the name of the highway, would be adequate. In such cases there shall be placed, in close proximity to the title, a Book of Reference. This shall be in tabular form and shall list all sections, lots, parcels, etc., and plans through which the right-of-way passes in a progressive order, together with the area of the right-of-way in each. (c.f. para. 2 (b) below.)

TREATMENT OF OLD ROADS THROUGH ALIENATED LANDS, AND CROWN LANDS FOR WHICH A PLAN HAS BEEN DEPOSITED IN A LAND REGISTRY OFFICE

2. Where the old right-of-way is UNSURVEYED

- (a) Where the old right-of-way is contained within, partially within, or closely adjacent to the new right-of-way, it shall be shown on the plan without linear or angular dimensions.

The width given to the old right-of-way shall be as gazetted, or if not gazetted the width shall be as decided by the District Engineer, or as recorded in his Road Register.

- (b) Areas shall be shown thus:

In the Book of Reference

(i) The total area of the new right-of-way through each lot or parcel, i.e. including those parts of the old right-of way within the boundaries of the new.

On the face of the Plan

(ii) The area to be acquired from each lot or parcel exclusive of the old right-of-way.

(iii) The area of the old right-of-way inside the new within each lot or parcel.

The sum of areas (ii) and (iii) thus equals that of (i). The total as in (i), which represents the area being surveyed, should be obtained by calculation. The areas (ii) and (iii) may be obtained by planimeter or graphic methods.

- (c) The plan shall be coloured to include the whole of the new right-of-way, i.e. including those parts of the old right-of-way, which are within the new right-of-way boundaries.

3. Where the old right-of-way is SURVEYED

- (a) Where the old right-of-way is contained wholly or partially within the new right-of-way then it is necessary to give full dimensions to the old right-of-way. Where it departs from the new right-of-way the dimensions of the first course shall be shown.
- (b) Where the old right-of-way is being widened merely by the acquisition of a strip of land on one side, then it shall be necessary to show full dimensions of the new acquisitions through each lot or parcel.
- (c) The areas of the additional lands acquired alone shall be shown in both the Book of Reference and on the face of the plan.
- (d) The plan shall be coloured to include only the additional areas acquired.

TREATMENT OF OLD ROADS THROUGH UNSURVEYED LANDS AND CROWN LANDS OF THE SECTION, DISTRICT LOT AND SUB LOT CATEGORY

4. Where the old road is within the new right-of-way no indication of it need be given on the plan. Where it departs from the new right-of-way the travelled surface (but not a right-of-way of any particular width) shall be indicated on the plan by dotted lines. This need only be done to such a distance from the right-of-way as offset measurements can easily be made from the main traverse.

SCALE OF PLAN

5. The scale of the plan shall not be smaller than 200 feet to 1 inch, depending on the detail to be shown. A change of scale shall necessitate a change of plan (this does not apply to enlargements of detail).

Where the land is in the section or district lot category, and is likely to remain so, 200 feet to 1 inch should be an adequate scale.

Where subdivision has occurred, or is likely to occur through and in the vicinity of small villages and unincorporated areas, the scale should be 100 feet to 1 inch.

G. S. Andrews,
Surveyor General and
Director of Surveys and Mapping.

WAT:KW

INSTRUCTIONS REGARDING THE LEGAL SURVEY OF HIGHWAY RIGHTS-OF-WAY

1. The outer boundaries or centre line of a highway right-of-way shall be established on the ground in accordance with the following requirements.

2. The general principle shall be to survey and monument a right-of-way symmetrically located with respect to the centre line of the constructed highway. Location and "as constructed" plans of the highway, showing the various widths and other pertinent information, also field notes, will be supplied, if available, by the Chief Engineer, Department of Public Works, at Victoria, or that Department's representative on the ground.

3. *Widenings.*—When widenings to the right-of-way are necessary in order to include cuts, fills, small marginal areas, gravel pits, etc., they shall, when on Crown land, be bounded where possible by a series of straight lines in order to conform to topography and exclude excess areas. When any such widenings are on privately owned lands, they should be surveyed to conform, as nearly as practicable, to the boundaries shown on the plans supplied by the Department of Public Works or as instructed by the representative of that Department. If the construction widths, or other conditions, are found to differ from those on plans supplied, they should be reported to the Chief Engineer, Department of Public Works, Victoria, and instructions awaited.

4. *Old Roads.*—Boundaries of public roads which are surveyed and shown on an approved plan, and which are to be retained as such, shall be retraced, and where practicable tied to an existing surveyed lot. Any other existing public road, which is to be retained as such, shall be traversed along the centre line, and, where practicable, tied to an existing surveyed lot; the said road should be given a width of 33 feet on each side of the centre line, unless instructed to the contrary. When in doubt as to the length to which an old road should be retraced or traversed, or as to the status of same, please consult with the Divisional Engineer, Department of Public Works.

5. *Distances* are to be chained in feet and reverse-chained in links, both measures to be of consistent precision. Final chainages are to be in feet to the nearest hundredth of a foot and shall be the average of the two chainages. An accuracy of 1/5,000 is to be maintained.

6. *Bearings.*—Bearings shall be derived from stellar observations. These should be taken at the origin of the survey, at five (5) mile intervals, or at least once every forty (40) angles of the main traverse, and at the close of the survey. A maximum tolerance or discrepancy of twenty seconds per mile between the observed bearing and the bearing by account after convergence has been applied shall be permitted. Any such discrepancy shall be adjusted by distributing the error between the main traverse angles concerned.

7. *Type of Monument.*—The types of standard survey-posts to be used are as follows:—

- (a) The standard concrete, rock, or pipe post, referenced with B.T.'s where available, and as described in the current Instructions regarding Permanent Survey Monuments issued by the Surveyor-General under the "Land Act."
- (b) An iron post of type 5 (B.C.L.S. bar) as described in the current Regulations regarding Surveys and Plans made in compliance with the "Land Registry Act" and issued by the Surveyor-General, with an accompanying wooden reference stake

painted white, of triangular cross-section with one face approximately 4 inches broad and appropriately marked.

8. *Monumentation.*—Standard survey-posts, as per clause 7, shall be established, either on one of the outer boundaries or as reference to the centre line, in accordance with the following:—

(a) Outer boundary:

(i) Standard pipe posts at the beginning and end of curves and at deflection points where no curve is used, also if necessary at intermediate points so that the distance between adjacent monuments will not exceed three-quarters of a mile.

(ii) Standard concrete or rock posts are to be substituted for the pipe posts at intervals not exceeding three-quarters of a mile.

(iii) Standard pipe posts on one right-of-way boundary at intersections with district lot, section, or block boundaries.

(iv) Iron posts on both right-of-way boundaries at intersections with any type of surveyed boundary not referred to in (iii).

(v) Iron posts at all other relevant points on the side opposite to the main monumenting (see (i), (ii), and (iii)).

(b) Centre line:

(i) Standard pipe posts at all centre line P.I.'s or at points witnessing same on sub-tangents, also at intermediate points, offset to an outer boundary, should a tangent exceed three quarters of a mile.

(ii) Standard concrete or rock posts are to be substituted for the pipe posts at intervals not exceeding three-quarters of a mile.

(iii) Standard pipe posts on one outer boundary and iron posts on the other outer boundary at intersections with district lot, section, or block boundaries.

(iv) Iron posts, on both outer boundaries, at intersections with any type of surveyed boundary not referred to in (iii), at B.C.'s, E.C.'s, and at deflection points where no curve is used.

(c) In subdivided or well-settled areas where there is interference by fences, or other structures, the standard pipe posts or iron posts shall be set on an offset towards the centre of the highway. Where possible, they should be sited at a point which is on the production of an intersecting boundary, on the radius at a point of curve, or on the bisector of an angle at a deflection point.

(d) Standard posts shall be marked appropriately to indicate (1) the official designations of the lands en route, (2) the surveyor's commission number, and (3) the serial number assigned to the post. The method of stamping these and the relevant lot, section, or block number on the post shall be in accordance with the Instructions regarding Permanent Survey Monuments issued by the Surveyor-General on April 26th, 1951. In the case of standard posts set to mark changes in direction of road boundaries, or as reference to the centre line, the following abbreviations shall be used:—

P.C.—Point of curve, beginning or end of curve.

P.O.T.—Point on tangent, sub-tangent, or sub-tangent produced.

P.I.—Point of intersection.

R.W.—Right-of-way being surveyed.

9. *Substitution of Spiral Curves on Located Centre Lines.*—To simplify survey, plans, and descriptions, it is considered desirable to eliminate in highway surveys, whenever possible, particularly through Crown lands, spiral curves now in general use in the location of most curves sharper than two (2) degrees.

The method suggested is to replace the "as constructed" spiral-circular-spiral curve assembly with one circular curve having the same radius as the original main circular curve. The limits of tolerance of the small displacement due to this may be referred to in detailed survey instructions. In cases, however, where the displacement would be considered excessive due to interference with private ownership, fencing, etc., the spiral curves should be replaced by terminal curves.

Technical details governing the replacement of spiral curves by terminal curves can be obtained in the following:—

- (1) P.R.A. Handbook, "Transition Curves for Highways," pp. 49 and 50—obtainable from the Superintendent of Documents, Washington, D.C.
- (2) "Transition & Terminal Curves"—obtainable from the secretary, Corp. of B.C. Land Surveyors.
- (3) C.P.R. Spiral Tables and amendment—"Terminal Curves Replacing Spirals."

10. *Necessary Returns and Preparation of Them.*

- (i) Plans of the afore-mentioned survey shall be prepared in such a manner as to conform, where applicable, to the provisions

of the "Land Registry Act" and the Surveyor-General's current regulations issued under authority of section 80 of the "Land Registry Act."

- (ii) Plans shall show the position of the travelled highway, degree of curves, and such other features as improvements within the right-of-way, near-by transmission-lines, etc.
- (iii) The scale of the plan shall be 200 feet to 1 inch, unless otherwise authorized. Application for any change should state reason and scale proposed.
- (iv) The survey of old roads, referred to in clause 4, shall be shown on the same scale as the highway right-of-way survey but not outlined in colour.
- (v) The markings on each standard post, referred to in paragraph (d) of clause 8, shall be indicated in a simple sketch of the post-cap to be shown on the plan.
- (vi) The original field notes covering the entire surveyed right-of-way, shall be submitted with the plan to the Surveyor-General.
- (vii) Details of the main traverse shall be shown on the plan in the form of a traverse table. In lieu of this, permission may be given to submit this information in ink on the usual traverse sheets.

G. S. ANDREWS,
Surveyor-General.

June 1st, 1953.

VICTORIA, B.C.

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