

# STATUTORY RULES.

## No. 12 of 1922.

### SURVEY REGULATIONS

Made under the *Land Ordinance, 1911-1919.*

1. These Regulations may be cited as the *Survey Regulations, 1922.*

2. Surveyors shall be under the direction and control of the Commissioner for Lands and Surveys. The decision of the Commissioner on all questions arising under these Regulations shall be final.

3. All surveys shall be performed under these Regulations upon instructions issued by the Commissioner, or by an officer specially authorized by him in that behalf.

4. A staff surveyor unable to readily communicate with the Commissioner may carry out surveys without instructions where he is satisfied that the survey is necessary, and that expense will be saved by making it whilst he is in the locality. A licensed surveyor will be paid only for work carried out under instructions.

5. All surveys shall be carried out personally by the surveyor to whom they are entrusted. The Commissioner may sanction the employment of any competent assistant surveyor, but the surveyor entrusted with the work shall be held solely responsible.

6. It is the duty of a surveyor to report to the Resident Magistrate any case coming under his notice of removal, obliteration or defacement of trigonometrical stations, survey posts, pegs or marks.

7. A licensed surveyor shall provide himself with all necessary equipment for carrying out surveys expeditiously and accurately.

8. Licensed surveyors shall be personally responsible for all expenses incurred in carrying out surveys. Staff surveyors will be provided with such labour as the Commissioner may consider necessary, and with all necessary instruments and camp equipment.

9. Instructions should be promptly dealt with. Where it appears to the Commissioner that there is unreasonable delay instructions may be withdrawn and issued to another surveyor.

10. Should a surveyor's work be found to be in error, or not in accordance with the Regulations, he may be called upon to rectify such error or default at his own cost, or may be charged with the cost of rectification by another surveyor.

11. In country of average difficulty the error of closure should not exceed 2 links per mile of perimeter.

12. Where survey work has to be amended, all superseded marking must be obliterated or defaced.

13. Field books supplied by the Department shall be used. So far as practicable not more than one survey shall be recorded in each book.

14. The Field book should contain —

(a) the No. of Portion, District and Division ;

(b) the date of commencement of survey, and at the end of each day's work the date should be written following the latest entry and initialled by the surveyor, this to be followed by the date on which work is resumed ;

(c) the datum on which the survey is based. If determined astronomically, time, altitude, bearings of R.O. and of sun or star. If from an adjoining portion, a description of the marks found and used ;

(d) bearings and lengths of all lines measured. Lines to be identified by a number at each angle. References should be given to pages on which any station reappears through intersection of lines. The actual measured lines—the angles of elevation or depression with corrections for these and for temperature to be entered at the side of the page and the horizontal distance entered on the central column ;

(e) the angular closure and the measured position of the point of intersection of boundaries with each other or with traverse lines are to be recorded ;

(f) field notes of portions having water frontage shall show separately the distance to traverse, to post and to the normal bank of a watercourse or to the high-water mark of the sea. The distance to a natural boundary where one exists is essential for the preparation of title deeds ;

(g) offsets to the bank of a creek which forms a boundary shall be shown at intervals of not more than 2 chains, and should not exceed 2 chains ;

(h) the position and descriptions of improvements and of natural features such as creeks, gullies, flats, hills, scrub, nature and quality of the soil and the density and nature of the vegetation should be clearly shown.

15. Field books shall contain the notes actually taken in the field and a diagram showing the outline of the portion.

16. In the event of alteration of a mistake, there should be no erasure, but the erroneous entry should be struck through and the correction written above.

17. The field notes should be sufficient to enable a competent draughtsman without other information to prepare a plan of the portion.

#### *Determination of Boundaries.*

18. When a road or a well-defined natural feature as a river, large creek or watershed is suitably situated to form a boundary it should be adopted. Failing these, lines should be directed to the cardinal points, i.e., to True North and South at the place and lines at right angles thereto. As the convergence in the Territory is generally under 8 seconds of arc per statute mile East or West, all lines on a survey of ordinary dimensions may be made parallel with those determined by observation. (See Par. No. 21.)

19. Where a part of a boundary is inaccessible a connecting traverse is to be made between the extremities of the measured parts if possible, and at such extremities stakes are to be inserted and their positions determined relatively to reference trees marked with the broad arrow.

20. Frontage to main roads and watercourses is to be computed at right angles to side lines and should not exceed two-thirds of the depth, excepting—

(a) When the Crown lands available do not permit this proportion to be made. (See Par. No. 63.)

(b) When the land suitable for agriculture is so situated (e.g., between a river and an extensive swamp) that a portion would include an unreasonable proportion of useless land, the surveyor should use his discretion as to the form of the portion. In such cases he must pay due regard to the interest of the public as well as to those of the applicant, and should in his report give reasons for his decisions to depart from the general regulation.

21. All lines are to be run out and angles measured with a carefully adjusted theodolite, the horizontal circle of which is not less than 5 inches in diameter, unless instructions specifically permit the use of other instruments.

22. To obtain a datum for isolated surveys the direction of the true meridian should be found by astronomical observation. This datum may be used for a group of adjoining surveys not extending more than 5 miles East or West.

Where the datum used is the boundary of an adjoining portion formerly surveyed an observation is desirable to test the correctness of the azimuth, and where it is found that this departs more than 2 minutes of arc from the true meridian, bearings on plan should be shown from the azimuth determined by observation. Magnetic bearings should never be used on the plans of surveyed portions.

23. All boundary lines shall be cleared to a width of not less than 3 feet by the removal of all scrub and trees of a less diameter than 6 inches.

24. The trees standing nearest the boundary line are to be marked with a horse-shoe mark cut into the heartwood on opposite sides of the tree so as to face along the line. In forest country only trees close to the line need to be marked. In sparsely-timbered country all within 5 feet of the line. A tree standing on the line is to be marked with two horseshoe marks on each side one above another.

25. The four principal corners of a portion are to be marked with hardwood posts 3 feet 6 inches long, 4 inches by 4 inches, sunk 2 feet into the ground; lock-spit trenches, 10 links long and 9 inches deep, to be dug in the direction of boundaries.

Additional corners to be hardwood 15 inches long, 3 inches by 2 inches, driven 12 inches into the ground; lock-spit trenches, 6 links long, 1 link deep.

When a tree stands on a corner it shall be marked with four horseshoe marks and the bark removed from a suitable part of the tree; on the surface thus exposed the broad arrow shall be cut, and beneath it the portion number.

26. At intervals of not more than 10 chains along a boundary, and so far as possible visible from one another, alignment pegs 2 inches square hardwood, 18 inches long, are to be driven 1 foot into the ground. Lock-spits, 5 links long and 1 link deep, to be dug on either side in the direction of the line.

27. The nearest suitable tree to a corner post should have the bark removed in the form of a shield facing the post. On the exposed space the broad arrow and the portion number in Arabic numerals to be cut at least  $\frac{1}{2}$  inch deep. The bearing and the horizontal distance to be measured from the point of the broad arrow to the corner.

28. Should no suitable tree stand within a distance of 2 chains from the post the broad arrow and portion numbers to be cut into the post.

29. Where a marked line or traverse exceeds 120 chains in length, posts of the same dimensions as those used at principal corners are to be inserted at intervals of about 1 mile, and a reference tree to be marked with the broad arrow and for identification with a letter of the alphabet. The positions of these posts and the bearing and the distance of reference tree to be shown on the plan.

30. Where bedrock is met with in post holes, the posts to be solidly packed up with stones, and, if necessary, rows of stone placed in the direction of the boundaries in lieu of lock-spits.

Rocks at corners are to be marked by a broad arrow and the portion number and pick marks in the direction of the boundaries. Where the nature of the rock renders it desirable the broad arrow and the portion number may be painted.

31. Access by road must be provided to every surveyed portion. No survey will be accepted which cuts off from access any previously surveyed portion, any Crown or native lands or water supply.

32. The customary width of a road is 1 chain but for sufficient reasons this width may be increased or reduced.

At the crossing of a river or creek the road shall be provided of such extra width as may be requisite to enable formation of the best causeway or construction of a bridge in the best position.

33. So far as possible, roads should be located along the boundaries of portions, i.e., the form of a portion may be modified to conform with the position of a road.

34. In the survey of portions contiguous to previously surveyed areas the roads through the new work should be laid out in continuation of those through the old.

35. Reserves for water, camping, timber, quarries or any other public purpose, should be provided where necessary on all roads through portions.

36. Where practicable surveyed road lines should be laid out with lengths on the side measured in whole chains or in chains and tenths of chains.

37. Where the roads are surveyed on one side only secant lines are to be measured across the road from angles, and the angle at the opposite side marked by a post.

38. All roads forming boundaries of portions on both sides are to be measured and marked on both sides.

Roads reserved out of portions are to be surveyed on one side only unless otherwise directed.

39. Surveyed lines forming the sides of roads are to be marked, pegged, posted and lock-spitted as directed for the boundaries of portions. A post to be inserted on each side of the road at its intersection with a boundary or with another road.

40. Where land is applied for with frontage to a navigable river or the sea, if there is a track or road in use along the foreshore a road must be reserved of sufficient width, not less than 1 chain. If there is no track, but the frontage is suitable for future use as a road, a similar reservation must be made.

Where, through the natural formation of the shores or their tortuous direction, it is not likely that they will ever be required for traffic, the bank of the river or high-water mark should be made the boundary. Especial care must however be taken to reserve suitable landing places, where such exist. These reserves should be of such area as to include a supply of firewood for camping parties, and access should be provided from them to any road passing through the portions.

Where a road is reserved along the foreshore the boundaries of the portion must be measured and marked.

41. Surveyors should advise the Department of any lands that should be reserved for town sites, water supply, road metal, camping, trigonometrical stations, lakes, waterfalls, spots of unusual beauty or for any other present or future public purpose.

42. The angular and linear measurements on each closed survey are to be checked by the calculation of the difference of latitude and departure of each line computed to tenths of links for country, and to hundredths of links for town lands.

43. Areas of portions except such as are rectangular are to be computed by double longitudes.

44. Fractional quantities may be omitted from areas, as specified hereunder:—

In portions of—not more than 1 rood ...	...	less than one-tenth perch
More than 1 rood—not more than 2 acres ...	...	less than half a perch
More than 2 acres—not more than 10 acres ...	...	less than 1 perch
More than 10 acres—not more than 50 acres ...	...	less than 10 perches
(bounded by right lines)		
More than 10 acres—not more than 50 acres ...	...	less than 1 rood
(bounded partially by a watercourse)		
More than 50 acres—not more than 500 acres ...	...	less than 1 rood
(bounded by right lines)		
More than 50 acres—not more than 500 acres ...	...	less than 2 roods
(bounded partially by a watercourse)		
More than 500 acres—not more than 1,000 acres ...	...	less than 2 roods
(bounded by right lines)		

More than 500 acres—not more than 1,000 acres    less than 1 acre  
(bounded partially by a watercourse)

Exceeding 1,000 acres    ...    ...    ...    1 acre

45. Where roads intersect boundaries, the closure of one side of the road with the boundaries must be computed.

46. The direct bearing and distance between portions connected with each other by traverse only are to be calculated and shown on plan.

47. All such calculations computed or copied on to forms supplied by the Department shall be forwarded with the plan and field book.

48. Plans are to be drawn on forms supplied by the Department. These will be supplied to licensed surveyors at cost price.

49. The scales to be used are 1, 2, 4, 10, 20, 40 chains to 1 inch. Intermediate scales must not be used. A diagram showing details may be to a scale of 50 links to 1 inch.

50. Plans shall be drawn with the North point upward and shall contain the following information—name of applicant, bearings and lengths of lines, areas of portion and of roads and reserves and area exclusive of such roads and/or reserves, width of roads, direction and width of frontage rivers, natural features, names of rivers and hills, reference to corners, azimuth of survey, scale, position of improvements, Portion No. on the face of the plan and also as heading, District No. and Division, astronomical observations. A certificate, specifying date, personal survey and compliance with these Regulations shall be written on the plan and signed by the surveyor.

51. Boundary lines are to be firmly ruled in black ink with bearings and lengths written along them. Lines not measured to be shown by broken lines and computed bearings and distances to be followed by the words “computed.”

52. Traverse lines are to be shown by firm blue lines and the bearings and lengths written on the plan in the tablets provided for the purpose.

53. Secants across roads at their angles need not be shown on plan when the width is uniform.

54. All the corners of country portions and the angle points in traverse surveys are to be shown on plan by small circles of the same colour as the lines circumscribing the points of intersection of lines. Astronomical stations to be shown by a small red triangle.

55. Except as above red ink must not be used by the surveyor, this colour being used for office corrections and notes.

56. The bearings of lines to be shown on plans expressed in degrees and minutes reading from True North round through East to 360 degrees. The length of lines to be horizontal lengths.

57. Lines of coasts and banks of rivers are to be shown on plans by firm black lines when their margins have been exactly determined; and by broken black lines when located approximately. Opposite sides of watercourses and an arrow showing the direction of the stream should be sketched on plan.

58. The locally-known or native names of rivers, lakes, hills, etc., should be written on plan.

59. Hills, creeks, swamps, edges of scrubland, etc., on or adjacent to the portion so situated that they can be located with reasonable precision are to be shown on plans.

60. Official letters should be written on paper of foolscap size, on one side only, with a margin of two inches and with a heading descriptive of the subject of the letter. Each letter should be restricted to one subject.

61. So soon as practicable after the end of each month, surveyors shall forward to the Commissioner a progress journal in the prescribed form.

62. Plans are to be forwarded to the Commissioner with field book, calculations of closure and area, report and instructions noted with date of completion of survey, and, in the case of licensed surveyors, vouchers in triplicate.

63. The position of an isolated portion or group of portions must be determined by a traverse connexion to some previously determined point, if such exists within a distance of 5 miles, unless otherwise instructed. Failing this, bearings should be taken to defined capes on the seashore or to mountains that can be identified. Careful observations should be taken for latitude so as to approximately fix the position North and South.

64. All lands in the Territory which have not been acquired by the Crown are held to be the property of the natives. A surveyor must therefore be careful not to include in a portion lands which have not been acquired by the Crown, either by purchase or by Proclamation declaring the land waste and vacant.

65. The area stated on instruction is that granted by the Lieutenant-Governor in Council and cannot be exceeded without a fresh Council Order. A surveyor must therefore regard this area as a maximum. Where sufficient Crown land is not available for the full area a reduced area must be surveyed.

*General Rates.*

66. Except when otherwise directed, payment for survey work shall be by linear measurement according to the following rates:—

Open forest and grassed country, per linear mile, £7.

Tropical jungle (including cane grass), £10.

Where the plan and field book show that the country is exceptionally rugged, the Commissioner for Lands and Surveys may at his discretion approve the payment of an increased rate up to £15 per mile.

Traverse lines with theodolite and tape, per linear mile tropical jungle, £5.

Traverse lines with theodolite and tape, per linear mile open forest and grass, £3 6s. 8d.

Traverse lines of water frontage which form boundaries, paid for at marked line rates with allowances.

Compass traverse, open forest and grassed country, per linear mile, £1 15s.

Compass traverse through jungle, per linear mile, £3 6s. 8d.

Compass traverses are to be run only under express instructions from the Commissioner for Lands and Surveys.

For all road lines directed to be measured and marked, whether on one or both sides, payment will be made at the marked line rate for each line measured.

A fee of 5s. will be allowed for each intersection with a previously surveyed line not being one of the lines of the survey in course of execution; but where the necessary connexion exceeds 5 chains the whole length measured along the original line will be paid for at the traverse rate of 66s. 8d. per mile.

A fee of £3 3s. will be allowed for commencing survey of isolated portions or of groups of surveys by the same surveyor.

Inspection work not usually necessitating the employment of a full party will generally be paid for at £2 2s. per diem.

Observations (check) calculated 7s. 6d. each not less than 2 miles apart along boundary.

Observations complete for datum (isolated), £1 each.

Observations for magnetic declination, 5s. each.

Observations for latitude, 10s. each.

67. Survey of town allotments and inspection for new roads to be made by staff or inspecting surveyor, or by contract surveyor under special arrangement.

68. A travelling allowance (surveyor, assistant and crew of six—full party) for time reasonably occupied in travelling will be allowed for at the rate of £3 per day, or, at the option of the Commissioner for Lands and Surveys, at the rate of 6s. a mile by land and 3s. a mile by water.

69. Vouchers are to be prepared in triplicate on the forms supplied by the Department, two copies being stamped and one always forwarded with the plans.

As soon as possible after the receipt of the plans and vouchers, an advance payment of seventy-five per cent. of the total amount payable may be made. The balance due will be paid when the examination of the plans and vouchers has been completed and the work passed.

Before a voucher is passed for payment, errors will be corrected, omissions supplied and overcharges reduced.

Overcharging is deprecated, and, if persisted in, the surveyor's claim for employment will be impaired.

Two and a-half per cent. on value of vouchers, exclusive of travelling allowance, will be allowed for preparation of plan and field book.

70. Survey Regulations No. 2, made under the *Land Ordinance*, 1911 (No. V of 1912) on the 10th day of December, 1912, are cancelled.

71. These Regulations shall apply only to surveys the instructions for which shall be given after the thirty-first day of December, One thousand nine hundred and twenty-two.

Made in Executive Council this fifteenth day of November, One thousand nine hundred and twenty-two.

Executive Council Minute,  
No. 3 of 40/1922.

H. L. MURRAY,  
Clerk of Executive Council.

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