

13

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GENERAL DIRECTIONS

GUIDANCE OF SURVEYORS.

Issued under the Authority of the Lands Department.

W. B. B. S. E. A. N. E.

PRINTED BY WILLIAM THORNE, EDWARD STREET

GENERAL DIRECTIONS

FOR THE

GUIDANCE OF SURVEYORS.

BRISBANE:

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GENERAL DIRECTIONS.

FOR THE

GUIDANCE OF SURVEYORS.

1. It will be the duty of District Surveyors to see that the Licensed Surveyors working under their supervision strictly conform to the general rules and instructions issued by the Surveyor-General for the regulation of surveys.

2. When issuing instructions for the survey of lands for sale, the general direction of the main lines of communication affecting the locality should be ascertained, and the Surveyor directed to take such measures as may best preserve not only the main roads, but also those requisite for access to each separate portion, and the vacant Crown lands beyond.

3. Upon the receipt from a Land Commissioner of requisitions for the survey of selections, the descriptions are to be examined, and should any be so far imperfect as not to afford data for the certain determination of the locality and boundaries, a memorandum should be sent to the Commissioner stating the nature of the defect, and, if practicable, suggestions for the amendment of the description.

4. Where requisitions for survey contain descriptions which overlap previous surveys or include land not open to selection, or if the boundaries are irregular or in any way at variance with the acts, rules, or regulations under which the survey is to be made, a memorandum is to be forwarded to the Land Commissioner, indicating not only the nature and particulars of the defect, but also suggestions for the requisite amendment where practicable.

5. In regard to such requisitions as are sufficiently accurate for the purpose of effecting surveys, instructions are to be issued as soon as practicable, and the Surveyor's attention is to be specially directed to the necessity of reserving all roads as in the case of surveys for sale; but as selections before survey are often isolated and more irregular in the boundaries than lands measured for sale at auction, greater care and attention is requisite, both on the part of the District

4

and Licensed Surveyor, to ensure the due preservation of the lines of road, both for present and future use; main lines of road and important water courses should govern the direction of the side lines of portions for the locality in which they are situated.

6. On the completion of a survey, Licensed Surveyors are to forward direct to the Surveyor-General, one copy of the plan, accompanied by the Requisition for Survey, Field Book, and Vouchers for the payment of the fees for survey; the duplicate plan is to be furnished to the District Surveyor.

7. On the receipt of duplicate plans of selections, the District Surveyor will examine them, and ascertain whether the survey has been duly executed according to the instruction for survey, and the general rules of the Department, especially in regard to the proper provision for roads. A report on each survey, with a statement whether the Surveyor is entitled to the extra percentage for scrub or heavily timbered country, is then to be forwarded to the Surveyor-General, stating whether the survey is approved by the District Surveyor, or has been reserved for examination of the work on the ground, or in what respects the work appears to be defective or objectionable, or if returned to the Surveyor for amendment or explanation.

8. When a duplicate plan of a selection is finally examined and approved by the District Surveyor, it is to be forwarded to the Land Commissioner from whom the requisition for survey was received, a copy being made and retained in the local offices.

9. District Surveyors are to avail themselves of every opportunity to acquire a personal knowledge of the features of their districts, so as to be able to furnish information and suggestions for the selection of roads, water reserves, camping grounds, or reserves for any other public purpose.

10. Where a District Survey Office and Draftsman are provided, a map of the district is to be compiled showing the positions of all the surveyed portions; and as the surveys of selections, auction lands, reserves, roads, &c., are completed, they are to be charted on the sheets including the localities.

11. Reserves which are often proclaimed before survey should be charted on the district map if the descriptions published afford sufficient data.

12. The scale of the district map should be two miles to one inch, that being the scale of the published lithographs, and where practicable, detail maps on a scale of 20 chains to 1 inch should also be prepared.

13. Groups of small portions should only have the external limits chartered on the 2 mile maps, and a reference entered by which the original surveys, or a sheet on a larger scale can be referred to.

14. Duplicate plans of surveys for sale at auction are to be retained as records in the district office.

5

15. A catalogue of all original maps or copies of originals is to be kept.

16. The area of Parishes should average about 25 square miles, natural features, or surveyed boundaries of portions being where practicable adopted for boundaries.

17. A standard chain is to be kept or laid down at each District Office, and at other convenient places with which each surveyor in the District will be expected to compare his own standard at least once in six months.

General Rules for the Arrangement of Boundaries of Portions marked for Sale, Lease, or other Alienation.

18. Lands having frontage to the sea or tidal waters are to be bounded by highwater mark, sandy beaches, mangroves, and bare mud flats are to be deemed to be below highwater mark, but ground bearing teatrees, swamp oak, or on which there is any description of grass or reeds, is to be dealt with as above highwater mark, and included in the computation of area. Small patches of mangrove and mud flats which are nearly isolated and included within the general limits of a portion, should be included in the computation of area, as they are of a character to admit of reclamation.

19. A reserve or esplanade 150 links wide should in all cases be reserved along the course of navigable rivers or creeks; and a similar reservation should be marked off along the sea coast where a road is practicable.

20. In marking portions in swampy country the limits of swamps are not to be adopted as boundaries; but the lands are to be laid out in rectangular form, and the whole space within the external limits is to be included in the computation of the area, but in the case of mangroves or salt water swamps, the boundary must be defined by straight lines as long as possible, adjusted to the margin of the swamp, the corners being marked in the usual manner.

21. Should the boundary of a portion terminate in deep swamp so that the corner is not accessible, the side lines are to be run to the margin of the swamp and posts placed, and the map should show the position of the posts, and also the position of the boundary not run, with a note that such part was not chained or marked on the ground.

22. Crown lands selected before survey, and having frontage to any water-course or any main road, are not to have a greater breadth of frontage than equal to half the depth where the area does not exceed 160 acres, or two thirds the depth where the area is greater than 160 but does not exceed 320 acres, or equal to the depth when exceed-

ing 320 acres; and the boundaries not being frontage to roads or natural features are to be at right angles, and directed to the cardinal points, unless some other general bearing has been adopted for that part of the district.

23. The proportion of frontage is to be measured at right angles to the side lines, and not along the windings of the watercourse or road.

24. The extreme length of any portion is not to exceed three times the mean breadth, the boundaries must be rectangular and quadrilateral; no re-entering angles or diagonal lines are allowed, except to follow the boundaries of portions previously surveyed, or lines of road.

25. In marking lands applied for under the *Pastoral Leases Act of 1869*, and the *Mineral Land Act of 1872*, attention is directed to clauses 54 and 6 respectively of those Acts. Also in marking off lands for auction on Goldfields, allotments held under Business Licenses should be allowed the full frontage provided by the *Goldfields Act*, in cases where it is necessary to include existing improvements.

26. All direct bearings and distances required for describing the connections of new with previously measured lands are to be calculated by the surveyor, and entered on the plan.

27. When the slope of the ground exceeds 5 degrees, the angle for computing the horizontal distance must be given in Field book

28. Permanent features, marked trees, or other points given by the selector to define the position of his land, are to be shown on the plan.

29. Every Licensed Surveyor who is employed in making surveys for the Lands Department, shall furnish for his own use—

- 1 Theodolite, not less than 4½ inches diameter.
- 1 Steel tape, for Standard.
- 1 Chain for general use.

subject to inspection and approval by the Surveyor-General

30. Each Licensed Surveyor to whom a defined district is assigned, shall supply himself with the necessary equipment and labor, and with copies of all plans of land adjacent to those which he may have to measure.

31. The Theodolite is to be used in all surveys, except in the preliminary work of determining roads or natural features. In all cases, the survey must be conducted by means of angular measurements, the needle being used for taking the magnetic bearing of a line only. Closing angles of all intersecting lines must be observed and noted.

32. For the convenience of transmission and record, plans should not be drawn on larger paper than is necessary to contain the work. Prepared sheets, of different sizes, will be supplied to surveyors on application to the office, in Brisbane, or to the district office.

33. Unless there be special reasons for a contrary course, plans should be made to read with the North upwards.

34. The magnetic North should be carefully marked on every plan by a line across the whole sheet; and where the survey represented is of any considerable extent, the variation of the magnetic from the true meridian should be shown. And in any case where a Surveyor's operations extend over say three weeks in one locality, it will be expected that the variation of the needle shall be determined by observation. The variation must be referred to some defined line on the ground. (See also clause 142.)

35. On all plans the scale should be drawn at the time when the plan is plotted, as it will thus be affected equally with the remainder of the plan by expansion or contraction of the paper; the scale of the plan should, in every instance, be stated.

36. Plans of town allotments are usually to be plotted on a scale of 2 chains to one inch; but in cases where the details are so small as to be indistinct on that scale, the larger scale of 1 chain to one inch should be used. Plans of suburban allotments are usually to be plotted on a scale of 4 chains to one inch, but the scale may be varied to 2 chains to one inch. Plans of country portions are to be plotted on a scale of 10 chains to one inch. Provided that where the plan of a single portion cannot be plotted on a sheet of the large sized paper, a smaller scale may be adopted to reduce the size of the plot to the limits of the paper.

37. Traverse lines of survey are to be shown by blue lines, and the bearings, or angles, and lengths, are either to be introduced in blue on the lines, or stated in a tabular form on the plan, with reference by numbers to the lines

38. Bearings to, and angles formed by distant or remarkable points, opposite sides of rivers, &c., and connecting lines for commencing points for descriptions, are to be shown in blue dotted lines, with the bearings and lengths (when ascertained) stated.

39. Lines of coast, rivers, and creeks, &c., are to be shown, where surveyed, by black lines, and where unsurveyed, by broken black lines; both sides of rivers are to be shown, and an arrow inserted to indicate the direction in which the waters flow,

40. Hills and undulations of the ground are to be carefully represented with pen, either in the horizontal or vertical style; they are not to be confined to the lands measured, but to be represented on either side of the lines of survey so far as they can be sketched in with any degree of accuracy.

41. The boundaries of swamps, forests, plains, lands liable to inundation, &c., are also to be represented, and the position and extent of any improvements, such as buildings, fences, cultivation, &c., which may exist on or adjacent to the lands measured, and their character and approximate value, stated in a note.

42. Existing roads and tracks are to be represented by dotted lines, and where reserved are to have "reserved road, 1 chain wide" (or such other width as may be convenient) written along their course. See instructions relating to roads. See clause 60.

43. Boundaries of previously alienated or measured lands, and opposite sides of streets, are to be shown as they exist, as Surveyors' marked lines; corner trees, fences, walls, &c., will be specially noted, and all discrepancies from the new survey clearly shown, and where considerable, explained, so far as practicable, in a note on the plan.

44. All known names of rivers, creeks, hills, lakes, localities, &c, should be shown on the plan, care being taken to ascertain and adhere to the correct orthography.

45. The geological and mineralogical character of lands measured, their suitability in towns for building purposes, and in country portions for agricultural or pastoral occupation, the supply of water and indigenous produce, as timber, grass, &c., are to be shown on the plan, either by writing across the portions or in a note. Any circumstance, such as proximity to towns or main thoroughfares, which may give increased value to the lands, is to be stated in the note.

46. Where lands are situated on or near navigable rivers or creeks the fact should be noted on the plan, as also the extent and description of vessel by which the stream may be navigable

47. Boundaries of portions and allotments should be shown by black lines, whether dividing them from previous measurements, from unmeasured lands, or from roads, and the bearings and lengths of all boundary lines should be clearly shown upon them; the distances from the point of intersection with any traverse line being distinctly shown to the nearest end of each, and particular attention is directed to the necessity of recording these particulars of intersecting lines on the maps, as no surveys will be passed for payment where this is neglected.

48. Plans are to be furnished without color, drawn in a clear open style, and the ink used should be thoroughly black, so that the plans may be available for copying by the photographic process if necessary.

49. The area of each portion is to be carefully calculated, as far as practicable, without having recourse to scale measurements, and it is to be shown within the portion; but broken quantities are to be omitted in the proportion to the total areas set forth in the subjoined table:—

In portions of not more than one rood	less than 1 perch.
More than one rood and not more than 2 acres... ..	less than 1 perch.
More than 2 acres and not more than 10 acres	less than 1 perch.
More than 10 acres and not more than 30 acres	If bounded by right lines less than 1 perch. If bounded partially by rivers or creeks, or having roads excluded less than 1 rood.
More than 30 acres and not more than 640 acres	
More than 640 acres	If bounded by right lines less than 1 rood. If bounded partially by rivers or creeks, or having roads excluded less than 1 acre. less than 1 acre.

50. The numbers will represent either numbers of town sections and allotments, suburban portions, country portions, in a parish, or those marked in isolated localities beyond the limits of parishes.

Where any doubt exists as to the proper numbering, reference should be made to the head office, or the District Surveyor, in order that duplicate numbers in the same parish may be avoided.

51. The reference on plan to marking of corners will, in the case of town allotments, be merely a statement that they have been marked in accordance with the general directions for marking boundaries, except where a tree or rock may form a corner, when its existence may be shown on the plan.

The reference to the marking of country portions is to be strictly in the form of the annexed table, the letter referring to the corner being of course varied as circumstances may require.

Corner.	Bearing.	From	Links.	Number of Trees.
A	North	Bloodwood	50	XV. XVI.
B	N. 4° 30' E.	Ironbark'	1.23	XVII.
C	—	No. tree near	—	—
D	N. 29° W.... ..	Swamp Oak	19	XVIII.
E	—	Rock	—	—

The bearing and distance from the tree to the corner should be taken horizontally from the mark on the tree; where in isolated surveys the unit number of the year is marked on the trees, the circumstance should be stated in a note at the foot of the table.

52. A note should be inserted on each plan stating that the theodolite has been used in the survey.

53. The titles to plans are to explain clearly what the plan is intended to represent, indicating the town, parish, and county, if within any or all of these, the numbers of the allotments and portions measured, and their general or particular locality where not in a town.

54. The word "lot," which is specially applied to lots of sale, is not in any case to be used in a surveyor's plan. "Allotment" is to be applied to town or suburban allotments in sections, and "portion" to other suburban and country portions.

55. Where measurements are made for special purposes, such as for auction, pre-emptive purchases, sites for schools, hospitals, etc., the fact should be clearly stated on the plan.

56. The surveyor's name should in every case be attached to the plan, with date of transmission, number of letter, also, the number and date of instructions under which the survey was effected, and in each case the authority or requisition for survey should be attached and forwarded with the plan.

57. At the end of every month each surveyor will have to furnish a list of all instructions for survey not completed.

In all cases where alterations are made on the ground, it is imperative that the former markings, including pegs, trenches, and marks or numbers on the trees shall be obliterated.

ROADS.

58. The selection of roads for general traffic, and also for access to each portion, being of primary importance in the subdivision of Crown lands, the first duty of surveyors marking portions of land for alienation will be to ascertain what existing tracks are in use, and to what extent they may be improved, either by the avoidance of obstacles or the adoption of more direct lines.

59. Roads may be classed under the three following heads, viz:—

(a) Main roads, which are roads required for access to centres of population, or to large areas which are occupied as farms, or reserved for that purpose, and all roads direct from the ports to the interior of the Colony or western districts. The width of main roads should not be less than 3 chains and may extend to 10 chains, according to the probable traffic and importance of the road, and whether required for driving stock to or from the pastoral districts. For this latter purpose the road should invariably be 10 chains wide. Selections of ordinary average size should not as a rule include land on both sides of a main road.

(b) Secondary roads, which are roads required to give access to limited areas or groups of farms situated on minor water courses and not likely to be required for through traffic to large tracts of country in the interior. These roads which should not be less than 2 chains in width, may be marked through selections, but this is to be avoided if possible.

(c) Roads of access, which are roads required for the purpose of providing means of access to particular farms only. These roads may be one chain wide, but preferably $1\frac{1}{2}$ chains wide.

60. Where lines of road have been previously surveyed, it is desirable that they should be adopted as the boundaries of portions.

61. Main roads which have not been previously surveyed should be measured and marked on both sides where they pass through portions; but secondary roads should only be measured on one side, and the opposite side marked at the angles by offsets across the road. Sub-ordinate roads for access to only a few portions or limited areas should be measured and marked on one side only.

62. In cases where it is desirable to make provision for roads, the approximate course of which cannot be determined at the time of survey, an area sufficient for such road should be included in the gross contents of each portion such road may probably intersect. The attention of Surveyors is particularly directed to the *Railway Reserves Act* in reference to reservations for roads, the same requirements will apply also generally throughout the Colony in all selections over 640 acres.

63. The plan of each portion should show the gross area, the quantity reserved for roads, and the net contents.

64. Where the back boundary of a selection would, in the ordinary form, nearly coincide with any road which is or ought to be laid out for access to other lands, such road should be adopted as the boundary, so far as is practicable, without prejudice to the selector of the land; as small severances of portions or irregular spaces between portions and roads are undesirable.

65. Each portion of land, as surveyed, is to be dealt with as a separate holding, and roads for access thereto must be provided to each, even where several portions are held by one person.

66. In marking portions of land contiguous to previous surveys, it is desirable that the roads through the new work should be laid out in continuation of those in the prior survey; but in case no suitable road has been provided, the roads through the new measurements should be continued through any unenclosed portion of the prior survey as may be necessary to complete the line of communication with the nearest convenient line of road in the vicinity. See clauses Nos. 121, 123.

67. Where portions having frontage to a river or watercourse extend back to country which is too steep, or otherwise unsuited for the formation of roads, especial care is to be taken to provide a road on each side of the watercourse through the portions, and also cross roads, at intervals which should not exceed 100 chains, for access to the back country and to the crossings of the watercourse.

68. If a portion is bounded by vacant Crown lands, it will be necessary to provide roads for access to the vacant land at such points as are suitable for their continuation as alienation progresses. Access must be provided to all lands, even where the inferiority of quality may be such as to render its sale unlikely.

69. Where isolated portions are to be connected with previous surveys, it is preferable to select the traverse of an existing track, or probable line of road, as a connecting measurement.

70. The bearing of the lines of roads should be kept to whole degrees, and the lengths on the side first measured to whole chains and tens of links. The surveyor will be held responsible for the introduction of unnecessary lines.

71. In very broken, irregular ground, where the actual track winds among obstacles, a portion of the road may be set out with an increased width, so as to admit of the deviations in the track without involving so many angles in the lines bounding the reservation for the road.

72. At the crossings of creeks, where it is desirable to increase the breadth of the roadway, it is preferable to make the approach by divergent lines, instead of marking rectangular reserves on the bank of the watercourse.

73. Surveyors will be expected to recommend reserves for camping at distances of about 10 miles apart along roads of the 1st and 2nd class.

74. Reserves for public purposes ranging in area from 25 to 100 acres, should be marked off at distances of about five miles apart. These reserves, being intended partly for School purposes, it is necessary that they should contain suitable building sites and be sufficiently high and dry, and healthily situated, with convenient access to water if possible, and should consist of good soil; the last two requirements giving way to the former where necessary.

FIELD BOOK.

75. Fields books are to be kept in one uniform manner, as set forth in the following instructions and the specimen field book and plot of survey issued from this office.

76. Although it is preferable to write field notes in ink, yet it is sometimes attended with such inconvenience in damp or hot weather that pencil may be substituted; provided the notes be written very firmly and clearly with a hard pencil.

77. The field book must contain an entry of every line measured, as a separate item; and the margin of the page must be marked at the commencement and end of every line with a letter or number of reference corresponding with that on the plan of the survey.

78. The measurements of each line must be entered between two parallel lines in the centre of the page, and the offsets noted outside. Where the length of a line exceeds ten chains, every tenth chain must be noted in the book at the time.

79. When any line crosses a line previously measured, the intersection of that line must be entered, and also the distance to the nearest station on the line crossed; and in long lines the angle at which they cross.

80. In order to facilitate this entry of intersections, the ends of all feature survey line, as well as boundaries, should be marked by pegs, and also at every tenth chain; so that in no case will the intersection of a subsequent line be more than five chains distant from a bench mark on the previous measurement, a peg should also be so placed in each line as to be seen from each corner.

81. In running side boundaries down to creeks, &c., the intersection of the previous feature survey line must be invariably entered, and also the point where the boundary peg is driven near the bank, and the distance to the bank of the creek, &c.

82. Diagrams of the measurements of either boundary or feature survey lines are in no case to be substituted for the separate entry of the lines in the field book, though diagrams may be used as additional records, or for explanation, and also where the interior detail of buildings or improvements on small allotments are so intricate as to render the use of a diagram expedient.

83. The measured lines which form the external limit of all surveys are to be reduced by computation, and the result entered in a traverse table, as shown in the specimen traverse table; and where the survey is very extensive the work is to be divided into convenient subdivisions, each of which must be separately computed so as to check errors; and in surveys of portions exceeding fifty acres the subdivision should be so arranged as to be surrounded by lines not exceeding an aggregate length of five miles. But where allotments are of less area than fifty acres the traverse must be computed for proportionately smaller subdivisions; and in town allotments which are not rectangular the proper lengths of all boundaries must be computed as well as measured on the ground.

84. In surveys of irregular features the traverse line should be made as long as practicable without extending offsets beyond five chains, the bearings kept to whole degrees, and the lengths to whole chains or tens of links, unless the adoptions of fractional bearings and lengths is unavoidable.

85. In all cases, the surveyor is to record in his field book the measurement on the ground; and the maps must also show the actual measurements, and not the computed length of each line, except as an explanatory note in addition to the actual measurements.

86. In all surveys, every boundary is to be laid out instrumentally and actually measured, even in the case of the internal subdivision of town sections into allotments; where the corners have all been marked on the external lines of the section, the whole of the subdividing lines must be actually measured.

87. The character of the soil, timber, and other important features of the country, are to be entered in the field book during the survey. These notes have been omitted from the specimen field book, to avoid confusion with the more important details.

88. Should an incorrect entry be made in a field book, it is in no case to be erased, but only crossed so as to show that it is an error, but must be left in a legible condition, and the correct number or matter stated separately.

89. The employment of assistants to lay out lines or make measurements, in the absence of the surveyor, is strictly prohibited.

TOWN AND SUBURBAN ALLOTMENTS.

90. The building lines of streets, and the side lines of lanes are, where the ground is not naturally clear, to be cleared to a width of not less than 4 feet, by the removal of all scrub, and trees less than 2 feet diameter.

91. Should large trees stand in the building line they are to be marked with the usual horse-shoe mark, and the precise position of the line indicated by a vertical mark 6 inches in length cut in the horse-shoe marks. (See diagram A.)

92. The corners of sections and of allotments are to be lockspitted to a depth of 6 inches and a length of 2 feet in the direction of the boundary lines, and where rocks occupy the positions of corners, they are to be marked by lines cut with a pick. (See diagram B)

93. At each section corner, except those which are marked by trees or rocks, a post 4 inches square is to be sunk 2 feet in the ground, and rising $1\frac{1}{2}$ feet above the surface; the top of the post to be pointed, and the side marked with the number of the section in Roman figures 4 inches in height. Where a tree stands at the corner of a section it is to be similarly marked.

94. At allotment corners, stakes not less than 18 inches long are to be driven 1 foot into the ground, and on the street frontages the number of the allotment is to be cut in Roman figures 2 inches in height. (See diagram C.)

95. In marking the first surveys in any new town, in addition to the above, which will obviously disappear with the occupation of the allotments, iron rods 1 inch in diameter and 18 inches long are to be driven perpendicularly into the ground and 6 inches below the surface, at the intersection of the centre line of a principal street (not the main thoroughfare) and the centre line of a cross street at intervals of about 20 chains or two sections not less than three should be inserted.

The District Surveyor will be expected to see to the placing of similar bench marks as towns extend so that in no case will there be more than about half a mile between them.

All surveys must be connected with one or more of these bench marks and the position of same be shown on the plan.

COUNTRY LANDS.

96. All boundary lines where the ground is not naturally clear are to be cleared to a width of not less than 3 feet, by the removal of all scrub and trees standing on the line, of a less diameter than 12 inches.

97. All trees upon boundary lines, within 3 feet in thickly-wooded country, or 6 feet in open forest, are to be marked with the horse-shoe mark (which is to be cut into the wood of the trees) on opposite sides in the direction of the boundary line; and those trees which are actually in the line are to be marked in addition with smaller horse-shoe marks above the others. (See Diagram D.)

98. Corners of portions should be marked thus,—when a tree stands at the corner, the bark should be removed from nearly half the circumference of the tree; and on the space thus cleared, there should be cut at least one inch deep into the wood, the broad arrow over the numbers (in ordinary numerals) of all the portions joining at the corner. Trenches indicating the direction of the boundary lines, should also be cut in the manner directed in the following paragraph. (See Diagram E.)

99. Where there is no tree at the corner, the nearest large tree should be marked as above described, the bark being removed from the side facing the corner. At the corner, a split hardwood stake not less than 4 inches square, $2\frac{1}{2}$ feet in length, should be sunk 18 inches into the ground, and trenches cut 10 links long and 9 inches deep in the direction of each boundary line, meeting at the corner. These trenches should commence not less than 1 foot from the corner stake. (See Diagram F.)

100. Should there be no tree near the corner, the stake used to mark the corner should be more than ordinarily substantial, and be numbered if practicable with the number of the portion.

101. Where the stake represents the corner of more than one portion, 2 trees should be marked on the opposite sides of the stake and preferably one in each of the portions, trees standing in a road being avoided as being more likely to be cut down.

102. Where the stony nature of the ground precludes a stake being driven, the lockspits are to be cut to the corner, and then packed closely with large stones. Rocks at corners are to be marked with pick-lines in the direction of the boundaries, and a broad-arrow.

103. The boundaries are to be marked at every tenth chain by a lockspit 1 foot deep and 10 links long, in the direction of the boundary, and a stake driven in the centre of the lockspit; such stakes should be of split hardwood, and be not less than 2 inches by 1 inch, and 15 inches long driven 1 foot into the ground.

104. Where measurements are made in isolated localities, where no parish boundaries have been proposed, and no perfect series of numbers can be adopted, or used in the description for deeds, it is still necessary, for the recognition of the lands by purchasers or intending purchasers, that the boundary marks of different portions should be distinguished by numbers. With this object, the corners of portions in each separate locality, or on any particular creek on which surveys may be made, are to be numbered in a series which will extend to all measurements made in the locality in each year, and to these numbers the unit number of the year is to be prefixed, the numbers appearing, of course, at all the corners of the portions which they represent. It is of the greatest importance that no confusion should occur in numbering, and surveyors will therefore exercise the greatest care and discretion in determining the boundaries for each series.

105. Field books are to be transmitted to the Surveyor-General's Office, with the plans to which they apply, in order that they may be compared with the plans and kept with other records. Surveyors should not, therefore, use books of large size, except in the case of extensive continuous surveys.

106. The title of each survey is to be entered at its commencement in the field book, as to correspond with the reference numbers on the plan, and the date of commencement and completion of each survey must also be entered in the field book and signed by the Surveyor.

107. All bearings are to be given in degrees and minutes, numbering from North, round by East, to 360 degrees.

108. Where not incompatible with the objects of the survey, it is desirable that the bearings of lines may be made to coincide with whole degrees, and the lengths with whole chains or tens of links, so as to avoid fractions. In marking off portions adjoining others already surveyed or in connecting old with new surveys it will be necessary to show the line of the old survey on which the meridian of the new is based.

109. As it is desirable that a record should be kept showing the Magnetic Variation in different localities a series of observations (not less than three) should be taken half-yearly in January and July, and the results with the computations forwarded to the head office, the true bearing of one of the lines of survey being effected at the time of observation should also be given.

110. When a surveyor has occasion to visit head quarters he will be expected to intimate his arrival and address while in Brisbane and to report also his return to his district.

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*General directions to be observed by Surveyors in marking
Roads required by the Works Department.*

111. The surveys of Roads are to be of three classes, namely:—

- (1) Roads through freehold lands.
- (2) Roads through leasehold lands.
- (3) Roads through Crown lands.

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CLASS I.—ROADS THROUGH FREEHOLD LANDS.

112. All roads through freehold lands shall be one chain wide, except under special instructions, or where the nature of the ground renders a greater width necessary, or where reservation for a greater width of road has been already made on the deed of grant, and such roads shall be marked on both sides.

113. All such surveys are to be made with the theodolite and chain, and the chainage reduced to horizontal measurement.

114. The lines are to be marked at every ten (10) chains, and at all angles, by *squared* posts dressed to the heartwood not less than three (3) inches square, and three and a half (3½) feet long, sunk, and well rammed, two (2) feet in the ground. In rocky ground, the same are to be built up into heaps of stone solidly packed.

115. In planting the posts, great care is to be taken that they be placed accurately in line and upright.

116. In crossing ridges, additional posts are to be placed on the *crests*, so as to allow of sights being taken on any part of the line.

117. All trees are to be cut down so as to allow of accurate sighting, instead of being passed by parallel lines or angles.

118. In timbered country, the lines are to be further marked by horse-shoe marks on three (3) sides of the trees nearest the line, two parallel with, and one facing them, cut to the heartwood, and not less than nine (9) inches long.

119. Where practicable, all angles and intersections of previous survey lines are to be marked by lockapits pointing in their directions ten (10) links long and not less than (6) inches deep, and by reference trees, having the broad-arrow and the number of section, and the Roads letter R, letters and numerals to be not less than four (4) inches long. The bearing and distance *from* the tree *to* the post to be taken and noted and tabulated on the plan, together with marks.

120. The severances caused by the resumption are to be carefully surveyed and checked by calculation, and the area of each severance and of the part resumed are to be stated on the plan. The different bearings and distances are to be shown on the lines in different colors; the original in black, the new in red.

121. Plans of surveys are to be furnished in duplicate, on a scale of not less than ten chains to one inch, and accompanied by the original field notes and a book of reference, in the prescribed form.

122. Separate plan, description, and declarations are also to be furnished for the Real Property Office.

CLASS II.—ROADS THROUGH LEASEHOLD LANDS.

123. The rules of Class I. are to be followed generally.

124. Roads through leasehold lands need be marked on one side only, but the opposite corners must invariably be fixed and marked so as to prevent the possibility of error.

125. Roads through leasehold lands must be connected with each boundary of the portions intersected by the road by measurements to the nearest corner.

126. The width of roads through leasehold land must not exceed that allowed by the Act under which the land is held except with the consent of the lessee in writing, and at all crossings of creek and rivers the roads are to be widened, if necessary, subject to the same conditions.

127. Separate plans are not required for the Real Property Office in the case of roads through leasehold lands.

CLASS III.—ROADS THROUGH CROWN LANDS.

128. All main lines of roads are to be made ten (10) chains wide, and marked by a single line along the *centre* in all cases. (See also clause 62.)

129. Such surveys are to be made with the theodolite and chain, and marked by large shields cut in the bark of the trees on or near the line, at such distances that one can be seen from the other, or not less than three (3) chains.

130. Should angles exceed a mile in distance apart, reference trees must be left to stakes on the line at intermediate points not more than a mile apart, and in all cases at the crossings of creeks, of edges of plains, timbered country, or scrub.

131. Where the lines leave timbered country and traverse flats, plains, or very openly timbered lands, sapling posts not less than four (4) inches in diameter, six (6) feet above the ground, and sunk three (3) feet, must be placed at every ten (10) chains instead of stakes, and thoroughly well rammed, to prevent disturbance or destruction by cattle, &c.

132. Wherever previous surveys of any kind are crossed or approached, the marks or reference trees of such are to be chained to and connected with, and carefully noted on the plan.

133. Plans are to be furnished to a scale of not less than 20 chains to an inch, showing the centre line in red, and the side lines *dotted*, the bearings and distances being shown on the centre line only. In every other respect, the instructions of Class I. are to be adhered to.

GENERAL INSTRUCTIONS.

134. In road surveys made in advance of settlement, the best possible route is to be selected which will secure the most direct communication, capable, at the same time, of economical construction and maintenance.

135. Surveyors laying out new roads are requested to furnish, for the information of the Government, any suggestions which may occur to them, derived from their local knowledge and practical experience of the requirements of settlers, especially in new districts; and also to indicate suitable areas for towns, villages, cemeteries, and reserves for other public purposes; and, generally, to give every information which they may deem of value to the Government.

136. Reserves are to be made on Crown lands at all crossings of creeks of permanent or sufficient water not less than five (5) miles apart, and at favorable sites for camping, for water storage, and for stone for metal or constructions.

137. Camping reserves are to be not less than 250 acres in area; water reserves, from 20 to 80 acres; crossing reserves of creeks or gullies, from 10 acres to 20 acres, and stone reserves, from 5 to 10 acres. Such reserves are to be ample in all cases, and not made where needless—their object in the case of crossings being to ensure space for future constructions and present convenient use.

138. On proceeding to make road surveys, the surveyor is instructed and required to provide himself from the Roads or Survey Office with a compilation of the district in which he is to operate,

showing all lands sold or selected, in order that lines of roads may be selected with reference to all townships, ports, reserves, established crossings, previous surveys, and selected lands; and to inform himself as to the lands which are freehold or leasehold, and, if the latter, under what Act, and also the lands held under pastoral lease.

139. Before proceeding with a survey the Surveyor is requested to send printed notices, issued by the Department, to the owners or occupiers of the lands through which the road is intended to be surveyed.

140. In making surveys through previously surveyed lands the meridian of one of the old surveys is to be adopted as a datum, and all lines referred to it, and accurately determined by the theodolite; but in new surveys, a datum is to be established, and accurately marked on the ground by a line not less than half a mile in length, in such a locality as will allow of the two extreme points to be seen from one another.

141. The variation of this datum line is to be ascertained by a set of observations of the sun, or a star, the mean of which is to be adopted true to not more than one minute of arc, and noted on the plan. These observations should be taken at distances not exceeding 25 miles apart. (See also clause 35.)

142. In surveying roads through surveyed lands, particularly through freeholds, the Surveyor must endeavour to find the exact position of the original boundary marks, and note in his field book the pegs or trees so found, and the marks thereon. If his measurements differ from the original survey, he must give sufficient evidence that the boundary lines adopted by him are identical with the original boundaries, even where the original marks are no more to be found. Fences cannot be relied upon.

143. The chain is to be kept carefully corrected to standard.

144. The field book is to be kept in all essential points in accordance with the Instructions relating thereto, (see clauses 76 to 90) but as much information as can be noted without crowding, particularly as to the crossings of creeks, should also be supplied. A separate field book to accompany each plan.

145. In all surveys the duty of the Surveyor will be to note and record everything at all bearing on the future construction of the roads surveyed, as—

- (a) The nature, quantity, and quality of the timber, and its distance from points required, and area required to be reserved.
- (b) The extent, permanence, and *quality* of the water.
- (c) Capability or facility for water storage by construction of roadway forming a dam.

- (d) The width and depth of creek crossings at the sites recommended for constructions or cuttings, the height of the ordinary and flood level, and the nature of the bottom, as alluvial, sandy, or rock; and a rough estimate of cost of construction.

(In important crossings requiring a bridge, a section should be taken, and bench marks left above flood level and out of the line of traffic, and particulars furnished with the plan.)

- (e) The extent of swamps, flooded or heavy ground that require logging or forming, and the distance of suitable timber or stone from each locality.
- (f) The gradient to be noted in all cases when it exceeds 1 in 24 and amount of sideling cutting necessary to avoid direct ascents.

146. The original local or native names of all creeks, hills, or other features is to be ascertained and supplied, as far as possible, and cross-bearings to hills or mountains shown on the plan.

147. As much of this information as can be conveniently shown or noted should appear on the face of the plan, but *all* is to be furnished in a report accompanying the plan and field notes.

148. A careful adherence to the foregoing instructions is enjoined; and when roads are marked in a careless manner regardless of feature, or consideration of expense of formation, through alienated lands where not necessary, or otherwise without exercising judgment and foresight, or where plans have to be returned on account of error or carelessness in the survey, the Surveyor will be surcharged with the cost of a re-survey.

149. The surveys are to be carried out in a manner as nearly as possible conformable with the general instructions.

150. A return of instructions undealt with by each Surveyor is to be transmitted to the Surveyor-General on the first of each month.

151. Plans of surveys are to be sent in as soon as each survey is completed.

W. ALCOCK TULLY,
Acting Surveyor-General.

Department of Public Lands,
Survey Branch,
18th July, 1878.

*Scale of Fees payable to Surveyors for marking Roads
required by the Works Department.*

CLASS I.—ROADS THROUGH FREEHOLD LANDS.

1. These roads to be paid for at the rate of £4 per mile for one side, and £2 per mile for all other measurements in connection with the survey of severances, &c.

2. The sum of £1 to be allowed for each surveyed portion through which the road is carried, to cover cost of report, book of reference, description of severances, in duplicate, and the area to be resumed for the road, together with the requisite plans and declarations for lodgment at the Real Property Office.

CLASS II.—ROADS THROUGH LEASEHOLD LANDS.

3. These roads to be paid for at the rate of £3 per mile, and £2 for all connections

CLASS III.—ROADS THROUGH CROWN LANDS.

4. These roads to be paid for at the rate of £3 per mile.

5. The above rates will include plans in duplicate.

6. The sum of 2s. 6d. will be allowed for each corner-post.

7. When road surveyors are engaged on surveys or inspections for which no special rates are fixed, payment may be made for their services at a rate not exceeding £3 3s. per diem, such allowance being fixed by the Surveyor-General.

8. Travelling expenses will be allowed at a rate not exceeding 2s. per mile where the work is at a distance exceeding ten miles from last survey undertaken. The Surveyor-General, however, reserves the right of dealing with cases of this class according to their respective merits.

9. The survey of portions or selections, whenever the road surveyors may be called upon to effect them, to be paid for at the rates payable to licensed surveyors.

Department of Public Lands,
Survey Branch,
Brisbane, 11th August, 1876.

HIS Excellency the Governor, with the advice of the Executive Council, has been pleased to approve of the following Scale of Fees payable to Licensed Surveyors, which will take effect from and after this date, in lieu of that previously existing, which is hereby cancelled.

JOHN DOUGLAS.

SCALE OF FEES PAYABLE TO LICENSED SURVEYORS.

Acreage.	First Portion.			Additional Portions.		
	Separate.			Conterminous.		
	£	s.	D.	£	s.	D.
Under 1 acre	0	14	0	0	9	0
" 5 acres	1	0	0	0	17	0
" 10 "	1	16	0	1	7	0
" 15 "	2	2	0	1	13	0
" 20 "	2	9	0	1	17	0
" 30 "	2	18	0	2	2	0
" 40 "	3	4	0	2	8	0
" 60 "	3	15	0	2	15	0
" 80 "	4	4	0	3	3	0
" 120 "	5	2	0	3	16	0
" 160 "	5	15	0	4	6	0
" 240 "	6	8	0	4	15	0
" 320 "	6	17	0	5	3	0
" 480 "	7	14	0	5	16	0
" 700 "	8	14	0	6	8	0

Lineal measurement (marked lines), £2 per mile.

Ditto ditto (traverse), £1 15s. per mile.

In portions above 200 acres and not exceeding 700 acres an addition of 2s. 6d. for each corner in excess of four will be allowed.

The survey of portions comprising 700 acres, and above that area will be paid for by lineal measurement, with the addition of 2s. 6d. for each corner.

1. An additional sum at the rate of 20 per cent. will be allowed for surveys effected in thickly and heavily timbered country, and 50 per cent. in dense scrubs or extremely rugged country. These additional rates will only be allowed on certificate of a district or staff surveyor.

2. Road surveys will be paid for at the rate of £3 per mile, to include the time occupied in the preliminary examination of the country through which the road passes. All road surveys will be

subject to rigid examination, in order to see that advantage is taken of the local features, and that straight lines are adopted where practicable.

3. The above rates will include plans in duplicate.

4. In cases where a licensed surveyor has been instructed to survey an isolated portion at a distance exceeding ten miles from any other portion for which he holds at the same time a requisition to survey, an allowance not exceeding 2s. per mile to cover travelling expenses, may be granted. The Surveyor-General, however, reserves the right of dealing with cases of this class according to their respective merits.

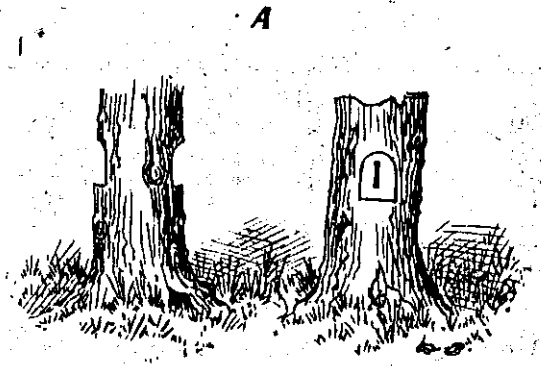
5. The survey of town allotments will be paid for according to the scale of fees where there are five or more allotments marked off; any smaller number will be paid for at such rate as the Surveyor-General may decide.

6. When surveyors are engaged on surveys or inspections for which no special rates are fixed, payment may be made for their services at a rate not exceeding three guineas per diem, such allowance being fixed by the Surveyor-General.

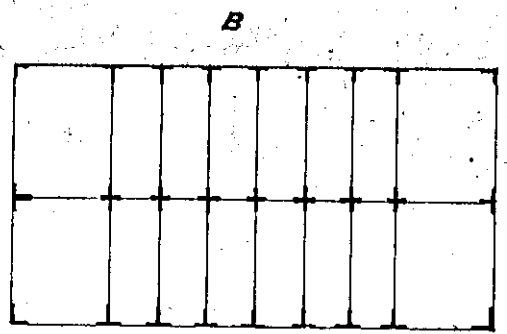
7. All surveys must be carried out according to the printed rules of the Survey Branch of the Lands Department. In the event of a survey being cancelled for any infraction of these rules, the Government reserves the right of surcharging the surveyor to the extent of the payment on account of the cancelled survey out of any moneys that may be subsequently due on account of other surveys.

NOTE.—In lieu of the allowances specified in clause 1 surveyors operating in the Cardwell District and those Districts north of it will be allowed 100 per cent.; also, in the Western Railway reserve the extra allowance will be 25 per cent.

These allowances only apply to lineal measurements; any special allowance will be at the discretion of the Surveyor-General.



Trees on Building Lines.



Tree Sections Lockspitted.

