

QUEENSLAND

**RULES AND DIRECTIONS**  
**FOR THE**  
**GUIDANCE OF SURVEYORS**

**EFFECTING SURVEYS UNDER**  
**"THE LAND ACTS, 1962 TO 1963"**

QUEENSLAND

---

**RULES AND DIRECTIONS**

FOR THE

**GUIDANCE OF SURVEYORS**

Being By-law No. 16 made under Section 24 of  
*"The Land Surveyors Acts, 1908 to 1916,"* and  
published in the *Government Gazette*, Vol. CCXV,  
No. 62 of 31st March, 1964

---

## FOREWORD

The approval of the Governor in Council was given on 26th March, 1964, to a new By-law (No. 16) under "*The Land Surveyors Acts, 1908 to 1916.*" This By-law, which was published in *Government Gazette* CCXV, No. 62 of 31st March, 1964, is titled "Rules and Directions for the Guidance of Surveyors Effecting Surveys under "*The Land Acts, 1962 to 1963,*" and supersedes the previous Rules and Directions established under Section 209 of "*The Land Act of 1910,*" and published in 1916.

These new Rules and Directions are now being presented in book form, accompanied by the specimen plans, field book, progress journal, solar observations, etc., referred to in the By-law, together with other useful information for the convenience and assistance of surveyors including temperature and slope correction tables, list of counties with the county variation and details of initial points, etc.



Surveyor-General.

Survey Office,  
Department of Lands,  
Brisbane, September, 1964.

## TABLE OF CONTENTS

—	Clauses
I Duties of Staff Surveyors .. .. .	1- 4
II Duties of Contract Surveyors .. .. .	5- 8
III Equipment and Camp .. .. .	9- 13
IV Conduct of Surveys .. .. .	14-144
(a) General .. .. .	14- 25
(b) Designs .. .. .	26- 36
(c) Meridians of Survey .. .. .	37- 45
(d) Selections and Reserves .. .. .	46- 80
(e) Town and Suburban Lands .. .. .	81- 95
(f) Roads through Unoccupied Lands .. .. .	96-113
(g) Roads through Leasehold and Freehold Lands .. .. .	114-122
(h) Re-surveys, Re-establishment of Old Boundaries, and Real Property Work .. .. .	123-133
(i) Astronomical and Geodetic Observations .. .. .	134-144
V Field Books .. .. .	145-161
VI Computations .. .. .	162-166
VII Plans .. .. .	167-194
VIII Correspondence .. .. .	195-202
IX Survey Co-ordination .. .. .	203-209

## SCHEDULE OF APPENDICES

- I Forwarding Letter.
- II Progress Journal—Contract Surveyors.
- IIA Progress Journal—Staff Surveyors.
- III Solar observations, worked out.
- IV Stellar Observations.
- V Gradient Table.
- VI Table of Links to be deducted from Measurements on a slope to reduce them to horizontal.
- VII Table of Temperature Corrections.
- VIII Table of Initial Points, &c., for the Counties of Queensland.
- IX The Application of Convergence.
- X Table of Convergence in Seconds per Statute Mile.
- XI Map showing Differences between Standard and Mean Time.
- XII Table of Lengths of Half a Degree, &c., of Latitude.
- XIII Table of Lengths of One Degree, &c., of Longitude.
- XIV Diagram illustrating the Method of Marking Trees.
- XV Diagram of Post and Corner Peg.
- XVI Diagram showing the Method of Numbering and Marking Town Sections.
- XVII Diagram Showing Method of Placing Iron Pins.
- XVIII Calculation of Closure and Area of Portion.
- XIX Specimen Plan of Portions.
- XX Specimen Plan of Town Sections.
- XXI Specimen Plans of Roads through Portions.
- XXII Specimen Field Book.
- XXIII Survey Co-ordination Act—Appendix A. Symbols. Cadastral Surveys.

## INDEX

—	Clauses
Aboriginal names to be shown on plans .. .. .	183
Access should be given to each portion, to be provided to vacant Crown Land, water, &c. .. .. .	99
Acts and Regulations, surveyor to obtain and become conversant with .. .. .	9
Address, surveyor to forward to the Surveyor-General .. .. .	6
Adjoining portions, work required when surveying .. .. .	41 to 44
Allotments, numbering of (App. XVI) .. .. .	91
Amendment of survey—erroneous marking to be defaced .. .. .	22
Amendments of "Directions", surveyors will be advised of .. .. .	14
Approximate methods of traverse may be used .. .. .	19, 30, 34
Areas—	
fractional quantities that may be omitted .. .. .	164
maximum of various holdings not to be exceeded .. .. .	47
small, not to be left vacant .. .. .	24, 25
to be calculated by "double longitudes" (App. XVIII) .. .. .	163
method of showing on plans (App. XIX & XX) .. .. .	187, 189
Arrears of work to be reported .. .. .	16
Astronomical observations, importance of .. .. .	3
stations to be shown by brown triangle on plan .. .. .	179
Azimuth of old lines to be observed .. .. .	51
Back lane to be provided in town surveys when directed .. .. .	84
Band, five chain steel—	
lines to be measured with .. .. .	18
part of surveyor's equipment .. .. .	9
standard supplied by the Survey Office .. .. .	10
standard to be compared with the Office standards periodically .. .. .	11
Band used in survey to be stated in field-book (App. XXII) .. .. .	150
Bands, working, to be compared with standard .. .. .	12
"Bank" of watercourse defined .. .. .	70
Bearings to be shown in field-books (App. XXII) .. .. .	154
on plans (App. XIX-XXI) .. .. .	180
to distant points to be taken—and shown by broken lines .. .. .	36, 181
Bores, position of .. .. .	186
Boundaries ( <i>See also</i> "Lines")—	
along sea coasts, lakes, navigable rivers, swamps, &c., to be marked lines .. .. .	73, 74, 75
direction and location of .. .. .	29
may be—	
modified to conform to road system .. .. .	24
varied to avoid inaccessible places .. .. .	68
previously marked, not to be re-surveyed .. .. .	51
original, to be re-established .. .. .	45
should be roads, rivers, ranges, &c. .. .. .	29
Building lines of towns and suburban lands, clearing of .. .. .	89
Case, each to be made complete in itself .. .. .	198
Certificate—	
field-book (App. XXII) .. .. .	160
on plan to be signed by surveyor (App. XIX-XXI) .. .. .	193
Chains. <i>See</i> "Bands" .. .. .	
Change of address .. .. .	195
Clinometer, when to be used .. .. .	18, 96

	Clauses
Closure—	
angular, to be shown in field-notes (App. XXII) .. ..	155
on plan (App. XIX-XXI) .. ..	175
measurements to be checked by and accuracy of (App. XVIII) .. ..	162
of severances to be computed .. ..	165
Coasts, delineation of .. ..	182
Commercial timbers not to be blazed .. ..	52
Commonwealth, marking on surveys for (App. XIV) .. ..	46
Comparison of meridians .. ..	44, 79
Compass—	
may be used in certain cases .. ..	17, 78, 96, 97
prismatic, to be used for traverse when connecting road is surveyed .. ..	78
surveyor to supply himself with .. ..	9
Computations to be forwarded .. ..	166
Condition of country and travelling to be reported monthly ..	199
Connecting surveys to be as direct as possible .. ..	77
Connections—	
along roads, one side to be marked .. ..	78
made from intersections to corners .. ..	121
shown by broken lines on plans .. ..	181
to isolated portions from previously marked trees or other known points .. ..	77
to previous surveys to be made and shown on plan .. ..	79
Continuation of existing roads .. ..	102
Contract Surveyors—duties of .. ..	5
Convergence—method of application (App. IX) Tables .. ..	39 App. X
Co-ordination ( <i>See</i> Survey Co-ordination Act) (App. XXIII)	203
Corner Posts—	
when found on re-surveys, action to be taken .. ..	124
diagram of (App. XV)	
particulars respecting .. ..	56, 64
Corners—	
marking of—country portions .. ..	56, 65
opposite, on roads to be marked .. ..	109
principal .. ..	56, 63
rocks at, how to mark .. ..	57, 92
town and suburban sections and allotments, details respecting .. ..	89 to 92
trees at, how to mark (App. XIV) .. ..	59 to 62
Corrections for inclination and temperature—	
to be applied to measurements (App. VI, VII) .. ..	18
to be shown in field-book (App. XXII) .. ..	154
Tables of .. ..	App. VI, VII
Correspondence .. ..	195 to 202
County Arbitrary Meridian—	
defined and to be adopted .. ..	38
new towns to be surveyed on .. ..	82
to be determined by observation .. ..	39
to be used for isolated surveys .. ..	39
County Initial Points (App. VIII) .. ..	37
County Variation (App. VIII) .. ..	37
Cross references to lines to be given in field-book (App. XXII)	152
Crowding on plans to be avoided .. ..	185
Dates to be given in field-book—	
instructions and commencement of survey (App. XXII) ..	150 (e)
completion of survey (App. XXII) .. ..	160
Datum by astronomical observation .. ..	42, 137
for angular measurement—	
county arbitrary meridians to be adopted as .. ..	38
isolated surveys .. ..	39
new towns, arbitrary meridian to be adopted as (App. XX) .. ..	82

	Clauses
Datum—	
line to be described in field-book .. .. .	151
shown on plan with variation (App. XIX-XXI) .. .. .	172
observation for .. .. .	137
from permanent marks in Town Sections .. .. .	95
Delineation of boundary lines .. .. .	174
coasts and watercourses .. .. .	182
road lines .. .. .	177
secants and traverse lines } (App. XIX, XX, XXI)	178
Deputy, unauthorised work by, to be reported by staff surveyors .. .. .	2
Description of country—	
to be given in detail in field-book (App. XXII) .. .. .	149, 159
shown on plan (App. XIX-XXI) .. .. .	185, 191, 192
Designs .. .. .	26 to 36
sketch plans for .. .. .	170
town .. .. .	81
Diagrams on plans .. .. .	170, 186
use of, in field-books .. .. .	153
Directions—surveys to be in accordance with .. .. .	116
Disputed boundary in re-surveys, action with regard to .. .. .	131
Districts may be assigned to authorised surveyors .. .. .	5
Documents to be forwarded on completion of work, list of .. .. .	200
Double longitudes, areas to be calculated by (App. XVIII) .. .. .	163
Double marking on trees (App. XIV) .. .. .	52
Drafting (App. XIX-XXI) .. .. .	169, 192
Duties of staff surveyors .. .. .	4
Encroachment on lease, consent of lessee to be obtained .. .. .	50
Entry, notice of, to be given .. .. .	115
Equalising lines on frontage watercourses .. .. .	33
Equipment .. .. .	9 to 13
to be inspected by staff surveyors .. .. .	9
Erroneous marking to be defaced .. .. .	22
Errors and omissions .. .. .	21
Errors, memoranda <i>re</i> , to receive prompt attention .. .. .	21
surveyor to correct at his own cost .. .. .	23
Esplanade along seacoast and tidal creeks .. .. .	74
to be left along lakes .. .. .	73
Expansion, corrections for, to be applied (App. VII) .. .. .	18
Farms—	
previously marked boundaries not to be re-marked .. .. .	51
maximum areas of .. .. .	47
Features, details to be noted .. .. .	36
to be sketched in black on plans (App. XIX & XXI) .. .. .	185
to be noted in field-books (App. XXII) .. .. .	158
Feature surveys, to be effected with compass and steel band .. .. .	17
scale of plans .. .. .	170
Fences along boundaries, how to measure and mark .. .. .	48
Fencing line, best, to be adopted as boundary .. .. .	29
Field-books (App. XXII) .. .. .	145 to 161
details to be recorded .. .. .	154
first page, information to be given on .. .. .	150
original notes to be furnished, erasures not permissible .. .. .	146
payment based on description of country and timber in .. .. .	149
separate entry to be made for each line .. .. .	152
specimen supplied .. .. .	148
supplied by Department, only to be used .. .. .	145
to be certified to .. .. .	160
to be clearly kept .. .. .	147
to be forwarded with plan .. .. .	161
uniform style to be adopted .. .. .	148



	Clauses
Forwarding letter for each survey (App. I) .. .. .	198
Frontage, watercourses, measurement of and other details ..	70
Frontages, details respecting water, to be shown on plans ..	176
Geological formation to be noted .. .. .	191, 36
Gradient Table .. .. .	App. V
Grading of roads, details regarding .. .. .	96
Grazing farms, fences along boundaries of .. .. .	48
Groups of portions, corners on .. .. .	63
Hair lines to be avoided in drafting .. .. .	168
High-water mark, general rule relating to .. .. .	75
Horseshoe marks on trees (App. XIV) .. .. .	52, 59
Improvements—	
methods of location .. .. .	19
to be included in roads .. .. .	101
on allotments .. .. .	88
shown on plans .. .. .	186
Inaccessible places, delineation of .. .. .	181
how to deal with .. .. .	67, 68
Inclinations, details respecting angle, correction and instrument (App. VI) .. .. .	18
Initial Point .. .. .	37
Initial Points, with county variations, table of .. .. .	App. VIII
Instructions—	
issued to Staff Surveyors .. .. .	4
may be withdrawn .. .. .	16
receipt of, to be acknowledged .. .. .	196
to contain complete information .. .. .	196
will show limit of area to be allowed .. .. .	47
Instrumental errors, checked and eliminated by observations ..	139, 140
Instrument used in survey to be stated in field-book (App. XXII)	150 (d)
Instruments to be supplied by surveyor .. .. .	9
to be used .. .. .	17, 18, 19
subject to inspection by staff surveyors .. .. .	4
Interference with survey marks a misdemeanour .. .. .	8
Intersection of lines to be noted in field-book (App. XXII) ..	152, 155
shown on plans (App. XIX-XXI) .. .. .	175
Iron pins, details respecting (App. XVII) .. .. .	58, 62, 63,
to be shown on plans (App. XIX-XXI) .. .. .	66, 109
to be surveyed by staff surveyor .. .. .	192
Irregular spaces between portions and roads to be avoided ..	25
Isolated portions—connecting to .. .. .	77
to be laid out on the county arbitrary meridian .. .. .	39
to be surveyed by staff surveyor .. .. .	2
Lakes, boundaries along .. .. .	73
Latitude, observation for .. .. .	141
table of length of half degree, &c. .. .. .	App. XII
Lessee's consent to be obtained for encroachments on lease ..	50
Letter, separate one for each case .. .. .	198
Letters and replies, official .. .. .	197, 21
Limit of fractional quantities in areas .. .. .	164
Line, each to be entered separately in field-book (App. XXII)	152

	Clauses
Lines, bearings and lengths to be—	
recorded in field-book (App. XXII)	154
shown on plan (App. XIX-XXI) .. .. .	180
boundary—	
clearing and marking .. .. .	52, 89
location and direction of .. .. .	29
over inaccessible places, how to deal with .. .. .	67
pegging .. .. .	54
broken, to be used on plans in certain cases .. .. .	181, 182, 192
previously surveyed, meridian of, to be established .. .. .	43
need not be re-surveyed .. .. .	51
to be identified .. .. .	45
road—	
to be measured and marked like "Boundary lines"	109
traverse, to be as long as practicable .. .. .	69
Living areas to be designed .. .. .	28
Local Authorities—	
to be consulted <i>re</i> —	
areas of allotments .. .. .	84
matters of public requirement .. .. .	7
reserves .. .. .	7
roads .. .. .	7, 27, 100, 107, 114
selection of town sites .. .. .	7
to be notified of road survey .. .. .	114
Local names to be shown on plans .. .. .	183
Local time, difference between standard and, of various places in Queensland .. .. .	App. XI
Longitude, table of length of one degree, &c. .. .. .	App. XIII
"Lot" not to be used on surveyors' plans .. .. .	188
Magnetic declination .. .. .	142, 143
Marked trees—	
of previous feature surveys to be connected with former, to be defaced, when amendments are made .. .. .	77
.. .. .	22
Marking—	
in sparsely timbered or open country .. .. .	53
lines along fenced boundaries of leases .. .. .	48
on connecting traverses .. .. .	77
Marks, survey, removal of, .. .. .	8, 208
Maximum areas of various holdings .. .. .	47
Measurements to be checked by computation .. .. .	162
shown in detail in field-book (App. XXII) .. .. .	154
Memoranda to receive immediate attention .. .. .	21, 196
Meridian adopted—variation of, to be shown on plans. <i>See also</i> "county arbitrary meridian" .. .. .	172
Meridian, astronomical, surveys by staff surveyors to be referred to .. .. .	3
of adjacent surveys to be adopted .. .. .	44
of road surveys to be the same as that of portion .. .. .	118
of town surveys indicated by Permanent Marks .. .. .	95
true, to be determined for datum .. .. .	39
work to be referred to (App. III) .. .. .	134, 138
Meridians of work to be compared .. .. .	40, 79
Mile trees and pegs to be inserted on long lines .. .. .	55
Minimum, necessary work to be restricted to .. .. .	30, 45, 80
Misclosure and re-survey .. .. .	51
Narrow strips of land not to be left vacant .. .. .	25
No marks are found, action to be taken in re-surveys when .. .. .	127
North point on plans to point upwards .. .. .	170
Notice of entry to be given in road surveys .. .. .	115
Noxious weeds, infestation by .. .. .	36, 159
Numbering of allotments and sections, details regarding (App. XVI) .. .. .	90, 91, 92
portions .. .. .	46

	Clauses
Obliteration of previous marking in amended surveys .. .. .	22
Observation, one complete solar, illustrated .. .. .	App. III
Observations, astronomical .. .. .	134 to 144
additional .. .. .	140
check, defined, &c. .. .. .	139
for county arbitrary meridian .. .. .	43
datum .. .. .	42, 137
latitude .. .. .	141
magnetic declination .. .. .	142, 143
variation .. .. .	138
general statement .. .. .	134 to 136
importance of .. .. .	3
limitations as regards payment .. .. .	140
reasons to be given when not taken .. .. .	136
requirements of the Department .. .. .	136, 139
stellar .. .. .	App. IV
to establish datum .. .. .	42, 137
prove work .. .. .	51
refer work to true meridian .. .. .	134
Observing stations to be shown—	
in field-book (App. XXII) .. .. .	156
on plans (App. XIX-XXI) .. .. .	179
Offsets, limit in length and distance apart .. .. .	69
Original boundaries—	
to be adhered to in re-surveys .. .. .	123
to be identified .. .. .	45
Original marks on re-surveys, to be recorded in field-book and on plan .. .. .	128
Packets to be neatly made up, &c. .. .. .	201
Party, surveyor personally responsible for his .. .. .	13
Payment may be withheld in certain cases .. .. .	21
Pegs in sparsely timbered country .. .. .	53
on town and suburban lands .. .. .	91
to be marked at every mile on long lines .. .. .	55
Permanent Survey Marks, damage to be reported .. .. .	208
in towns .. .. .	93, 94
Personal survey directed .. .. .	15
Plans (App. XIX-XXI) .. .. .	167 to 194
broken lines, when to use .. .. .	181, 182, 192
copied by photography ( <i>see</i> specimen plans) .. .. .	168
crowding on, to be avoided .. .. .	185
diagrams to be drawn on, where necessary .. .. .	170, 186
forms to be used .. .. .	167
information to be shown on ( <i>see also</i> Appendices)—	
aboriginal and local names .. .. .	183
angular closure .. .. .	175
bearings and lengths of lines .. .. .	180
datum and its variation .. .. .	172
details in tabular form .. .. .	178
with regard to water frontages .. .. .	182
improvements .. .. .	186
intersection of lines .. .. .	175
physical features .. .. .	185
portion, number, area, &c. .. .. .	187, 189, 190
scale .. .. .	170
variation of adjacent surveys .. .. .	172
" " adopted meridian .. .. .	173
method of showing ( <i>see also</i> Appendices)—	
areas .. .. .	189
boundary lines .. .. .	174
coasts and watercourses .. .. .	182
road lines .. .. .	177
stations and station numbers .. .. .	179
traverse lines and secants .. .. .	178

	Clauses
<i>Plans (App. XIX-XXI)—continued</i>	
not up to standard may be rejected or redrawn .. .. .	169
not to be folded .. .. .	201
of re-surveys, method of showing measurements .. .. .	132
plotting of .. .. .	170
specimens supplied (App. XIX-XXI) .. .. .	169
title to be written on .. .. .	193
to be drawn by surveyor or under his supervision .. .. .	167
drawn clearly with black ink .. .. .	168
forwarded on completion of work .. .. .	194, 200
Postage to be prepaid .. .. .	201
Posts to be marked if no tree within two chains .. .. .	61
Posts, diagram of .. .. .	App. XV
Previously marked lines not to be resurveyed .. .. .	51
to be identified .. .. .	45
Progress Journals to be forwarded monthly (App. II, IIA) .. .. .	199
Public requirements .. .. .	7
to receive attention by staff surveyor .. .. .	2
reserves to be provided for .. .. .	87
Railway lines, connections to .. .. .	79
Ranges as boundaries, survey of .. .. .	34
Re-establishment of original boundaries .. .. .	45
Removal of survey marks .. .. .	8, 208
Report—	
on changes in watercourse .. .. .	69
resurveys, special, to be forwarded with plan .. .. .	133
roads .. .. .	100
town and suburban lands, details to be given .. .. .	81
Reservations for various public purposes, to be recommended .. .. .	2, 28, 76, 105
Reserves—	
for camping to be provided .. .. .	105
gravel and road metal to be provided .. .. .	105
various public purposes to be recommended .. .. .	2, 28, 76, 87
Local Authorities to be consulted respecting .. .. .	7
survey of roads through .. .. .	103
to be provided .. .. .	
in town surveys, for various public purposes .. .. .	87
on roads for various public purposes .. .. .	105
Re-surveys .. .. .	123 to 133
action when—	
blazed trees are found .. .. .	126
corner post and reference tree are found .. .. .	124
lengths as re-surveyed are in excess of original .. .. .	129
line pegs, lockspits, &c., are found .. .. .	126
no marks are found .. .. .	127
reference tree only is found .. .. .	125
connections to original corners required .. .. .	130
consequent on misclosure .. .. .	51
disputed boundary, all particulars to be given .. .. .	131
field-book, position of original marks to be recorded .. .. .	128
method of showing original and re-measurements .. .. .	132
regulations under "By-law No. 7" to be observed .. .. .	116, 123
special report to be forwarded where necessary .. .. .	133
to be made when closure of survey is very bad .. .. .	20
Road—	
gradients (App. V) .. .. .	96
projections to be prepared .. .. .	30, 97
requirements of districts to be known to staff surveyors .. .. .	2
specimen plan of .. .. .	App. XXI
surveys, scale of plans .. .. .	170
systems to be connected .. .. .	102

	Clauses
<b>Roads—</b>	
all to be surveyed .. .. .	106
connecting, one side to be marked .. .. .	78
designed, may be traversed or surveyed .. .. .	30
to be carefully selected .. .. .	28
existing, to be continued .. .. .	102
general remarks .. .. .	96
inspections for, through leasehold and freehold lands .. .. .	117
to be made .. .. .	96
intersections to be noted .. .. .	121
Local Authorities to be consulted respecting .. .. .	7, 27, 100, 107, 114
lowest practicable grade to be obtained .. .. .	96
Main Roads, general .. .. .	112
marking of lines, forming the sides of .. .. .	113
opposite sides of—	
on boundaries of grazing farms, how to mark .. .. .	49
to be indicated .. .. .	108, 109
preliminary traverse for, instrument to be used .. .. .	17, 18, 97, 98
previously surveyed, retraverse sometimes necessary .. .. .	111
reservation for, inadvisable—to be surveyed .. .. .	106
selection of best route for .. .. .	96
slope of, general rule with regard to .. .. .	96
survey of, to be according to “ Rules and Directions ” and the “ Real Property Regulations ” .. .. .	116
through—	
freehold lands to be surveyed—	
in accordance with “ By-law No. 7 ” .. .. .	116
on both sides .. .. .	120
grazing areas—	
ample provision to be made for travelling stock leasehold and freehold lands (App. XXI) .. .. .	107 114, 116, 117, 121
careful inspection to be made .. .. .	117
Local Authorities to be notified .. .. .	114
meridian to be same as that of portion .. .. .	118
notice of entry to be served .. .. .	115
to be connected with nearest corner on intersected boundary .. .. .	121
vacant or unenclosed lands, continuation through through Reserves .. .. .	102 103
to be widened in certain cases .. .. .	104
to form boundaries of portions .. .. .	24, 29
to include existing tracks and improvements .. .. .	100, 101
widening at watercourses .. .. .	104
width of .. .. .	107
Rocks at corners .. .. .	57, 92
Scale of plans .. .. .	170
School Reserves to be provided .. .. .	76, 105
Sea coast, esplanade along .. .. .	74
<b>Secants—</b>	
delineation of (App. XXI) .. .. .	178
measurement of .. .. .	110
not paid for on roads wider than ten chains .. .. .	110
Selection—or farms not to exceed maximum areas .. .. .	47
<b>Severances, closure of, to be checked .. .. .</b>	<b>165</b>
small, to be avoided .. .. .	25
Slope, corrections for (App. VI) .. .. .	18
Soil, quality of, to be noted .. .. .	36, 185
Solar observations (App. III) .. .. .	134 to 141
Spaces, irregular, between portions and roads to be avoided .. .. .	25
Staff surveyors, duties of .. .. .	1 to 4
Standard deviation in linear measurement .. .. .	20
Standard time, definition of, &c. .. .. .	App. XI

	Clauses
Stations and station numbers, method of showing on plans (App. XIX-XXI) .. .. .	179
to be numbered in field-book (App. XXII) .. .. .	152
Stellar observations (App. IV) .. .. .	134 to 141
Stock routes and roads, details regarding .. .. .	107
ample provision for travelling .. .. .	107
Streets in towns, location and width of .. .. .	85, 86
Suburban lands. <i>See</i> "Town and suburban lands" .. .. .	81 to 95
Survey Co-ordination Act .. .. .	203 to 209
Surveyor-General will direct staff regarding details .. .. .	4
Surveyors (Contract)—	
absence from district and delays in work .. .. .	6
address to be notified .. .. .	6, 195
definition of .. .. .	5
duties of, generally .. .. .	5 to 7
equipment to be inspected by staff surveyors .. .. .	2, 9
may have specified districts .. .. .	5
personally responsible for camp expenses .. .. .	13
their work .. .. .	15
to consult Local Authorities as to public requirements .. .. .	7
to correct their own errors at their own cost .. .. .	23
to make themselves conversant with Acts and Regulations .. .. .	9
to provide for public requirement .. .. .	7
Surveys—	
along a watercourse or road to be connected with portions on opposite side .. .. .	79
by staff surveyors to be referred to astronomical meridian .. .. .	3
difficult, to be effected by staff surveyors .. .. .	2
extensive, to be initiated from astronomical data .. .. .	137
special, to be effective by staff surveyors .. .. .	2
to be carried out by the person instructed .. .. .	15
completed within three months .. .. .	16
in accordance with "Directions", &c. .. .. .	2, 14, 116
referred to true meridian .. .. .	134
Swamps, fresh water, not to be taken as boundaries .. .. .	72
Tablets on plans, details to be filled in (App. XIX-XXI) .. .. .	178
Telegraph lines, to be connected with .. .. .	79
Temperature, corrections to be made for (App. VII) .. .. .	18
Ten chain pegs .. .. .	54
Tension and temperature, particulars of, with regard to standard bands .. .. .	10, 11
Theodolite, part of equipment .. .. .	9
to be used .. .. .	17, 18, 78, 97,
	98
Three months, work to be completed within .. .. .	16
Timber, names spelling of .. .. .	184
Title of surveys to be given in field-book (App. XXII) .. .. .	150 (e)
on plans (App. XIX-XXI) .. .. .	193
Topographical information to be noted when making surveys .. .. .	36
Town and suburban lands .. .. .	81 to 95
plans, details of drafting (App. XX) .. .. .	192
plans, scale of .. .. .	170
Town sections and allotments—	
dimensions of .. .. .	84
improvements to be included in .. .. .	88
numbering, &c., of corners (App. XVI) .. .. .	90 to 93
to be rectangular where practicable .. .. .	83
Town—	
new, to be surveyed on county arbitrary meridian .. .. .	82
specimen plan of (App. XX) .. .. .	
Town sites, selection of .. .. .	7

	Clauses
Town surveys—	
clearing lines .. .. .	89
designs to be submitted .. .. .	81
esplanade to be left along rivers and creeks .. .. .	87
reservations required .. .. .	87
streets, location and width of .. .. .	85, 86
Tracks, existing, to be included in roads .. .. .	96, 100
Traverse—	
along frontage watercourses to be marked .. .. .	71
connection to be made to trigonometrical stations .. .. .	144
lines—	
delineation of (App. XIX) .. .. .	178
to be as long as practicable .. .. .	69
of fences .. .. .	19, 48
ranges .. .. .	34
watercourses .. .. .	31, 33
preliminary, of roads, &c., by prismatic compass or theodolite .. .. .	17, 79, 97, 98
Trees, absence of, post to be marked .. .. .	61
are found, action to be taken when .. .. .	125
at corners .. .. .	59, 62, 89
blazed, are found, action to be taken in re-surveys when .. .. .	126
diagram illustrating method of marking .. .. .	App. XIV
on and near boundary and building lines, how to mark (App. XIV) .. .. .	52, 89
less than six inches in diameter to be removed .. .. .	52, 89
marking of (App. XIV) .. .. .	59, 113
not to be used for reference purposes or blazed .. .. .	52
on previous feature surveys to be connected with reference on design to be marked .. .. .	77
on fenced lines .. .. .	35
should be selected in portion .. .. .	48
separate for each portion—not more than two .. .. .	59
to mile pegs .. .. .	60
to be more than twenty links from post in grazing farms .. .. .	55
Trigonometrical stations—	
bearings to be taken and connections made with .. .. .	144
reservations for, to be recommended .. .. .	76
Vacant strips of land not to be left .. .. .	24, 25, 34
Variation, County (App. VIII) .. .. .	37
observation for (App. III & IV) .. .. .	138
of adopted meridian to be shown on plans .. .. .	171
adjacent survey to be shown on plan .. .. .	172
datum to be shown on plans .. .. .	173
Vegetation, nature of, to be noted .. .. .	36, 149
Watercourses, delineation of (App. XIX) .. .. .	182
considerable change to be reported .. .. .	69
details to be shown in field-book (App. XXII) .. .. .	157
frontage, survey of .. .. .	31, 71
surveys along, to be connected with portions on opposite bank .. .. .	79
to be traversed where roads meet them .. .. .	104, 121 (c)
traverse of, for design .. .. .	31, 33
unsuitable for frontage, &c. .. .. .	33
Water—	
frontages, details to be shown on plans .. .. .	176
supply, reservation of sites for, to be recommended .. .. .	36, 76

	Clauses
Weather, prevailing and changes of, to be reported monthly (App. II & IIA) .. .. .	199 (e)
Widening roads in certain cases .. .. .	104
Work, arrears of, to be reported .. .. .	16
by unauthorised persons to be reported .. .. .	2
documents to be forwarded on completion of examination of, by staff surveyors .. .. .	194
in error or default, to be corrected or completed by surveyor at his own expense .. .. .	2
progress of, to be reported monthly .. .. .	23
to be properly connected with former surveys .. .. .	199
proved by astronomical observation .. .. .	79
restricted to a minimum .. .. .	51
	30, 45, 80



*"The Land Surveyors Acts, 1908 to 1916"*

(QUEENSLAND)

**BY-LAW UNDER "THE LAND SURVEYORS  
ACTS, 1908 TO 1916"**

Department of Public Lands,  
Brisbane, 26th March, 1964.

HIS Excellency the Governor, acting by and with the advice of the Executive Council, has been pleased to approve of the following By-law under the provisions of *"The Land Surveyors Acts, 1908 to 1916."*

ALAN FLETCHER,  
Minister for Lands.

---

WHEREAS by the provisions of section 24 of *"The Land Surveyors Acts, 1908 to 1916,"* the Surveyors Board is authorised to make By-laws for all or any of the purposes in the said Acts mentioned: It is hereby resolved by the said Board that the following By-law shall be in force from the date of publication thereof in the *Gazette*:—

BY-LAW No. 16

**RULES AND DIRECTIONS FOR THE GUIDANCE OF  
SURVEYORS EFFECTING SURVEYS UNDER "THE  
LAND ACTS, 1962 TO 1963."**

I—DUTIES OF STAFF SURVEYORS

1. Staff Surveyors (Authorised Surveyors in the Public Service) shall be under the control and direction of the Surveyor-General.
2. Staff Surveyors are expected to acquire a personal knowledge of the districts in which, for the time being, they are operating, particularly with reference to immediate and future road requirements; to inspect and report to the Surveyor-General on lands, advising the reservation of all lands that may be required for public purposes; to effect isolated, difficult and special survey work; to examine, by re-survey where necessary, and report on surveys effected by surveyors; to inspect surveyors' equipment; to report such instances of defective surveys or of surveys being effected by unauthorised persons as may come under their notice, and generally to promote the early and efficient completion of survey work; to be prompt in recognition of, and give immediate attention to all such public requirements as may be dealt with by the Department of Lands. In the performance of these duties they will be guided by the Departmental Rules and Directions.
3. Particular attention is directed to the importance of frequent astronomical observations for meridian, both in effecting original surveys and in the examination of surveyors' work. No survey can be considered complete unless referred to the astronomical meridian.
4. The Surveyor-General will from time to time issue to Staff Surveyors instructions for their guidance in matters of detail connected with their obligations, as salaried officers, to the Department, and in their relations with the State-paid labour employed in their survey parties.

## 2 Rules and Directions for the Guidance of Surveyors

### II—DUTIES OF CONTRACT SURVEYORS

5. Contract Surveyors are Authorised Surveyors, in private practice, who effect surveys, when instructed by the Surveyor-General and others, at prescribed rates. Any specified district may be assigned to a surveyor, who will generally be entrusted with the survey operations required therein; such assignment shall not confer on him an exclusive claim to all the work in that district.

6. Surveyors effecting surveys for the Survey Office are required to advise changes of address and to notify the Surveyor-General concerning any delays anticipated or actual in the progress of the work. (See also Clause 16.)

7. Surveyors are directed to consult with Local Authorities on matters of public requirement in which they may be in doubt—such as the location of roads, reserves, town sites, minimum areas and Town Planning Schemes—and the views and requirements of Local Authorities should receive careful attention; but the onus of providing for present and future public requirements in these respects will nevertheless fall upon the surveyor, who should look well into the future, especially where lands are being surveyed for alienation.

8. Section 476 of *"The Criminal Code"* provides that "Any person who wilfully and unlawfully and with intent to defraud, removes or defaces any object or mark which has been lawfully erected or made as an indication of the boundary of any land, is guilty of a misdemeanour and is liable to imprisonment with hard labour for three years."

Section 2 of *"The Survey Marks Act of 1852"* also provides: "If any person shall wilfully obliterate remove or deface any such survey mark as aforesaid or any land mark or beacon which shall have been erected by or under the direction of an officer of the Survey Department or by a surveyor licensed by the Government such person shall for every such offence forfeit and pay to Her said Majesty a sum not exceeding ten pounds to be sued for and recovered in manner aforesaid:

"Provided always that nothing herein contained shall render the owner or occupier of any land liable to any penalty for the removal of any tree thereon upon which any such mark shall have been made which he may desire to remove in fencing clearing or otherwise improving such land."

Any infringement of these provisions coming under the notice of a surveyor shall be reported to the Surveyor-General, and also to the nearest police officer.

### III—EQUIPMENT AND CAMP

9. Each surveyor employed by the Department shall supply himself, as a minimum requirement for use in survey work, with the following surveying instruments, namely:—

- One transit theodolite, either vernier or microptic, capable of doing the various classes of survey work within the accuracy required;
- One prismatic compass;
- One five-chain steel band for standard (see Clause 10); spring balance and thermometer;
- One or more five-chain steel bands adjusted to standard for general use;
- One steel band three hundred feet long;
- One aneroid barometer;
- One clinometer for road grading;
- One approved level and staff.

At all times during his employment he shall maintain such equipment in good and efficient order and it shall be made available if required for inspection by a Staff Surveyor.

He shall supply himself with all other necessary equipment, and shall obtain and make himself conversant with the Acts and Regulations relating to the leasing and alienation of Crown Lands.

10. Steel bands, which are subsidiary standards of measurement and must not be used as working tapes, will be supplied by the Surveyor-General at actual cost, and are correct only at certain temperatures and at certain tensions, particulars of which are supplied with each band.

11. The standard band should be returned to the Surveyor-General at least once every two years for comparison with the official standard and at any time if its value as a standard of measurement becomes impaired or the surveyor becomes doubtful of its accuracy.

12. To ensure accuracy in operation, all working tapes must be checked against the standard band from time to time.

13. Contract surveyors shall engage and be personally responsible for the cost of the labour employed in their respective survey parties.

#### IV—CONDUCT OF SURVEYS

##### (a) *General*

14. All surveys or other duties are to be carried out in accordance with these Rules and Directions, and such amendments thereof as may from time to time be authorised. Surveyors will be duly advised of all such amendments.

15. All surveys shall be carried out personally by the surveyor or under his immediate personal supervision. The character and extent of supervision to be exercised by a surveyor over a survey made under his supervision shall be as follows:—

He shall personally attend on the ground for such time during the making of the survey, and shall exercise such immediate oversight and personal direction of the work, as shall ensure that the survey is carried out in accordance with these directions.

16. As a general rule, surveys should be completed within three months of the date of the instruction. If a surveyor's work accumulates so that he cannot comply with this rule, he should inform the Surveyor-General of the cause of such accumulation, the order in which it is proposed to effect the work and the probable date of its completion. Instructions may at any time be withdrawn if considered necessary. (See also Clause 6).

17. Traverse surveys of features, improvements, soil and land classification, or of roads may be effected with the compass and steel band. Other surveys may, under special instructions only, be effected with the compass, but unless otherwise directed, all survey lines are to be ranged and angles measured with a carefully adjusted theodolite.

18. All measurements of length are to be made with the five-chain steel working band, the temperature of the band being noted at each measurement and the angles of inclination from the horizontal observed with theodolite or clinometer. The clinometer may be used with reasonable accuracy for slopes not exceeding 3 degrees. All inclined measurements are to be reduced to horizontal lengths, and further corrected for the expansion or contraction of the band from standard lengths.

#### 4 Rules and Directions for the Guidance of Surveyors

19. As a general rule, approximate methods will suffice to define the position of improvements in boundary surveys. Fences may be sketched in from intersections with the surveyed lines or by estimated distances, or they may be located by means of compass bearings and stepped distances, or by counting the fence posts or other similar methods. The position of other improvements, such as bores, &c., may usually be fixed by cross bearings or estimated with sufficient accuracy, but, where this is done, the plan should show that their location is approximate only. When it is necessary to determine the position of the improvements with greater accuracy, compass and chain traverses may be made.

20. As accurate surveys are required, the deviation from standard and misclosure in linear measurement, when tested by latitude and departure, should not exceed—

##### On Town Lands—

One inch in ten chains or one link per mile of the total surround—with an allowance of one tenth of a link in any minimum surround.

##### On Country Lands—

(a) On undulating country—one link in fifty chains.  
(b) On rough, broken or steep country—one link in twenty-five chains.

(c) Where another surveyor's work is involved—one link in twenty chains.

(d) Where surveys effected prior to 1890 are included in the surround—one link in ten chains.

An angular misclose of one minute in a surround, with a maximum accumulation of three minutes will be allowed in any new work—calculated on the basis of twenty seconds multiplied by the square root of the number of angles observed.

Where any doubt exists the allowable deviation will be decided by the Surveyor-General after consideration of the circumstances.

21. Official memoranda relating to errors and omissions must receive immediate attention. If a satisfactory reply is not received within a reasonable time, payment may be withheld, or action taken in the matter independently of the Surveyor concerned.

22. Where survey work has to be amended, all former marking must be obliterated or defaced, if instructed.

23. Should a surveyor's work prove to be in error or not in accordance with the rules as then established, he may be called upon to rectify such error or default at his own cost, or he may be charged with the cost of rectification as made by another surveyor.

24. As far as possible, roads should form boundaries of portions—that is, where the boundary of a portion would nearly coincide with a road, the road should be adopted as the boundary of the portion. Small severances of portions and irregular spaces between portions and roads are to be avoided.

25. As a general rule, areas of Crown Lands which in themselves are too small for separate portions, or narrow strips between portions, should not be left as vacant lands, excepting such as may be required for public purposes.

##### (b) Designs

26. Surveyors will generally be supplied with a design showing the proposed arrangements of roads and boundaries. The boundaries and areas should be adhered to as closely as possible but road location will be the responsibility of the operating surveyor.

27. The general road system may already have been approved by the Local Authority. However, where this has not been done, and where deviations or alternative routes are involved, the surveyor should obtain Council approval of the location. Matters which cannot be settled on the ground should be referred to the Surveyor-General.

28. When surveyors are entrusted with the design of Crown Land, the greatest care and discretion should be exercised so that the land may be divided to the best advantage into living areas having due regard to the location of roads and reserves for public purposes.

29. When situated consistently with the general design, boundaries should be roads, rivers, or creeks, or should follow ranges, spurs, or other leading natural features. Failing these in suitable positions, straight lines at right angles to one another should be adopted, and, as a rule, directed to the cardinal points, but any other general direction for boundaries may be adopted where such would more suitably conform with the general trend of road systems or natural features. In rough or rugged country it is important that the boundaries should be so located as to afford the greatest facilities for fencing. All natural and artificial advantages being conserved, symmetry of design, minimum of perimeter and rectangularity of form should be aimed at.

30. In many cases the position of the roads may be located by compass and step, or other approximate methods, if sufficient connection is made with existing surveys to check the reliability of the approximate work. When necessary for the purpose of a design, proposed roads may be traversed or surveyed. If traversed, the stations should be pegged and marked as detailed in Clause 71 and the dimensions of one side of the road determined by protractor and scale from a large scale plot of the traverse. (See Clause 97.) Where the roads are traversed, the road lines need not be marked by the designing surveyor, the point to be kept in view being that the survey work necessary to obtain a reasonably accurate design should be restricted to a minimum, pending approval of the subdivision.

31. Watercourses that are suitable for boundaries should be traversed and, where practicable, the traverse should be effected in such a manner that it may be used for the determination of the position of both sides of the watercourse. Where it is impracticable to obtain offsets to both sides, an offset should be taken to one side, and an approximate width of the watercourse estimated at the point of offset, from which to determine the position of the other side.

32. Small creeks and watercourses and creeks with banks likely to be subject to erosion should not be used as boundaries.

33. Watercourses that are unsuitable for boundary purposes, but are of such a nature that it is preferable to adopt give-and-take lines to obtain an equitable division of the water, or facilities for conserving same, should be traversed with compass and chain and equalising lines adopted as the boundary.

34. If high ranges are adopted as the boundaries of portions, their position should generally be located by approximate methods of survey, the approximate work being sufficiently connected with existing surveys to render it reasonably reliable. If lines are projected along or in the vicinity of ranges, care should be taken that all the available land is included so that no vacant strips of useful country are left between the portions and the ranges.

35. Reference trees should be marked at suitable intervals on all traverses effected for the purpose of preparing a design, with either letters or numbers for the convenience of intending selectors in locating the farms, or of the surveyor in locating the position of the permanent lines.

## 6 Rules and Directions for the Guidance of Surveyors

The traverse station number should be written with timber rayon on the single blaze of a tree facing the traverse angle.

36. When preparing designs, and in all surveys, surveyors should note the general surface and geological formation of the country, the quality of the soil, the vegetation, the existence of noxious weeds or plants and the water supply, observe bearings to hills and other conspicuous features, locate the improvements and generally obtain as much topographic information as possible.

### (c) Meridians of Survey

37. The "Initial True Meridian" in a county is the true meridian line passing through a fixed, centrally situated point (the "Initial Point") in the county.

The initial "County Arbitrary Meridian" is part of a great circle which also passes through the "Initial Point," but has a fixed angular divergence from the "Initial True Meridian."

This angular divergence is the "County Variation."

38. Except in very closely settled areas, the "County Arbitrary Meridian" is to be adopted as the datum for survey work on Crown Lands and, therefore, the meridians of survey work effected in each county will not converge—all north and south lines will be parallel, and all east and west lines will also be parallel.

39. Where new survey work is to be commenced—in isolated portions or in the survey of large areas or groups of portions not connected with a survey on the county meridian—this meridian should be established by the following method:—

Take solar or stellar observations to determine the true bearing of a survey line or a referring object related to the survey. Apply the convergence from the initial true meridian and the fixed county variation to obtain the county meridian as datum.

40. Where surveys effected in adjoining counties meet on their common boundary the angular difference (closing angle) of the connecting lines must be observed and recorded in the field books and on the plans.

The following rules should be adopted with regard to plans of surveys that extend from one county into another:—

(a) In the case of surveys of portions. Separate plans of the portions in each county drawn to the arbitrary meridian of that county and showing the difference in meridian between the two counties, must be supplied.

(b) In the case of road or feature surveys. If a break can be conveniently made at the county boundary, separate plans should be furnished as in (a). If no break can be made, the plan must be drawn to the meridian of the county in which the datum of the survey is located and this meridian must be maintained throughout. A general note, relating to the lines in the second county and stating the difference in meridian between the two counties, may be made on the plan.

In no case should the several parts of any one plan be drawn to several different meridians, as this at once leads to confusion and error.

41. Where any of the boundaries of an area to be surveyed coincide with or adjoin previously surveyed lines, the whole or so much as may be necessary of one of the previously surveyed lines should be carefully run out with the theodolite to re-establish the meridian of the original survey.

42. If the variation of the meridian of a long adjacent boundary line is known, instead of running it out with the theodolite, a datum for the new work may be established from a preliminary solar or stellar observation.

43. If the previously surveyed line was effected on the county meridian and—by running it out—its meridian is re-established, it should be adopted as the meridian of the new survey—subject however, if necessary, to check by observations taken in the course of the subsequent survey work. If for any reason it is not expedient to re-establish the previously surveyed line by running it out, the county meridian as datum for the new work should be established as directed in Clause 39.

44. If the land to be surveyed does not abut on to a tract of vacant land, but is wholly or almost wholly enclosed by previously surveyed lands, the re-established meridian should be adopted as the meridian of the new survey work but the correction for county meridian should be obtained by observation.

45. Where any of the boundaries of a portion under survey coincide with previously surveyed lines or boundaries, only so much work should be done as is absolutely necessary to re-establish the previously surveyed lines, and sufficient evidence must be given in the field book that the boundaries adopted are coincident with those previously surveyed. (See Clauses 151 & 155).

Occasionally, however, it may not be necessary for a new survey line to coincide exactly with a previously surveyed line. Such a case can only occur on Crown Lands or on the boundary of a Pastoral Lease. There, instead of incurring the expense of running out with the theodolite and offsetting an old previously surveyed line, a new line may be run on the recorded bearing, and a consequent slight want of coincidence with the previously surveyed line may be disregarded, if improvements or other interests are not affected thereby.

*(d) Selections and Reserves*

46. All surveyed portions are to be numbered in sequence, each parish having a separate series—the portion numbers will be stated in instructions.

47. In surveying farms care shall be taken not to exceed the maximum net area fixed under the Land Acts and the Regulations thereunder. (Note that areas vary for the same tenure in different districts).

The limit of area will generally be stated in the instruction for survey, but failure in this respect cannot be regarded as an excuse for exceeding the gazetted maximum area.

48. (a) In the survey of Perpetual Lease Selections or Agricultural Farms, good serviceable fences situated approximately on or near the boundaries of portions should be surveyed and lines closely following the fence pegged and marked as boundaries.

(b) In the survey of Grazing Farms, fences should be traversed only and suitable fence posts (preferably strainer posts), may be adopted as corners or corner pegs or posts may be placed near or under the fence. The straight lines between corners should be computed and adopted as boundaries, care being taken that the distance of the fence from the computed boundary nowhere exceeds about 20 links and that the corners are not more than 80 chains apart. The fence posts so adopted are to be marked with a broad-arrow, and, if no tree is available, marked with the portion number also; iron pins are to be placed in accordance with Clause 58.

8 *Rules and Directions for the Guidance of Surveyors*

(c) As it is desired to preserve traverse lines along fences forming portion or road boundaries in grazing areas, such traverses should be marked by placing a hardwood peg two inches square and eighteen inches long under or beside the fence opposite each picket, the chainage and offset in each case being recorded in the field notes and the nearest convenient tree blazed on three sides. The marked line rate shall be applicable to traverses so marked.

(d) As some uncertainty seems to exist among surveyors as to the method of traversing and pegging fences to be adopted as boundaries of Grazing Farms, the following rules shall apply:—

- (1) As the fence is the actual boundary, the computed lines between corners should be kept as close to the fence as possible so that areas will not be greatly affected;
- (2) The traverse lines should be kept reasonably close to the fence to facilitate the placing of pegs under (or beside) the fence;
- (3) Pegs 2 inches by 2 inches by 18 inches are to be placed under the fence square off pickets not more than 20 chains apart;
- (4) A corner peg 3 inches by 3 inches by 18 inches is to be placed under the fence where there is a definite bend, or, the strainer post adopted, but otherwise corners are to be established not more than about 80 chains apart;
- (5) In order that the traverse lines may be easily re-established, a careful offset is to be taken from the traverse line to each peg and recorded in the field notes. (No attempt is to be made to place intermediate pegs on the computed through line);
- (6) The computed line, fence and pegs are shown in the centre column of the field book—the traverse lines on the relative side;
- (7) When intersecting or commencing on a previously traversed fence, the traverse line should be established and the corner placed on the original computed line;
- (8) When fence traverses and intersections as above are required by instructions of even date—the post or peg is to be placed under the fence and used as a corner when computing the boundaries along the fence line.

49. In the survey of Grazing Farms where a fence forms one side of a boundary road or an intersecting road ten chains and under in width, it will not be necessary to survey and mark both sides of the road. Unless previously traversed, the side that is fenced should be surveyed and marked as prescribed in Clause 48 (b), the opposite corners being laid off therefrom. The lines between these corners should be computed and shown on the plans as the boundary of the portion or portions abutting thereon.

50. If such fences encroach to any serious extent on land held under Pastoral Lease, written consent to their adoption as boundaries should be obtained from the lessee or his responsible agent and forwarded to the Surveyor-General.

51. Where portions adjoin previously surveyed rivers, creeks, or marked lines, such shall not, without good reason, be resurveyed. Connections should be made with original corners and the azimuth of old lines observed—the surveyor's own work being proved by astronomical observations. A misclosure with old work, unless exceeding four links in a mile, will not justify a resurvey. (See Clause 20).



52. Boundary and road lines are to be cleared to a width of two feet by the removal of scrub, undergrowth and trees less than six inches in diameter. In scrub and in forest country the trees standing nearest to the line are to be marked with a horseshoe mark cut into the heartwood on opposite sides of the tree in such positions that the marks face along the survey line. Trees left standing and through which the line passes, are to be double marked on opposite sides in such positions that the marks face along the survey line. It is not desired to blaze commercial timbers which might be injuriously effected.

53. In sparsely timbered or open downs country, surveyors should neglect no reasonable opportunity of marking reference trees at corners, and where the only suitable tree is situated at a greater distance than two chains from the corner, a measured connection thereto may be made and charged for at traverse rates. Where there is only an occasional tree near the line, such tree shall be marked with a horseshoe mark on three sides (the centre mark facing the line) and the position of that mark in reference to the surveyed line shall be determined by a measured rectangular offset, which is to be recorded in the field book and shown on the plan. Wherever, in such country, a boundary line intersects an existing fence, the intersection shall be marked by the insertion of a peg.

54. At distances not exceeding ten chains apart, always so situated as to be visible one from the other, split hardwood pegs, eighteen inches long and two inches square clear of sap wood, are to be aligned with the theodolite and driven fourteen inches into the ground and the reduced chainage of each entered in the field notes.

55. Where the length of a marked line exceeds 100 chains, reference trees should be marked at a distance of one mile, or about one mile apart, and the bearing and distance determined from these trees to a mile or other chainage peg. The usual horseshoe marks should be cut and the bark removed in the form of a shield, the mileage or chainage being cut under the broad-arrow on the shield. The position of and the bearings and distances from such trees (taken from chisel cut bench mark at base—see Clause 59) are to be recorded in the field book and shown on the plan. Where both sides of a road are marked at the same time, these trees may be omitted from one side. In treeless downs, a marked peg should be placed at every mile.

56. Principal corners shall be marked with hardwood posts three feet six inches in length, clear of sap wood and dressed to not less than four inches square, with a butt six inches long and the full round size of the timber left on the bottom of the post. Posts are to be sunk two feet into the ground and well rammed. Where hardwood timber is not readily available, such as in dense vine scrubs, the corners may be marked with split hardwood pegs four inches by four inches and twenty inches long, well driven into the ground so as to leave four inches of their length above the surface.

In determining the number of corners to be marked with posts, the following rules shall apply:—

(a) On portions not exceeding 2,560 acres in area—

At four of the principal corners together with such additional posts as may be necessary to ensure that such marks are, as a general rule, not more than sixty chains apart.

(b) On portions exceeding 2,560 acres in area—

All corners should be so marked—provided that the principal corners are not, as a general rule, nearer than about 60 chains apart; that is, where the

10 *Rules and Directions for the Guidance of Surveyors*

boundary consists of a number of short lines, principal posts are to be placed at about 60 chains apart, the other corners being marked by the split hardwood pegs described in Clause 64.

(c) *On Roads intersecting Portions—*

Principal posts should be placed at distances not less than 60 chains apart, other corners being marked with split hardwood pegs (Clause 64).

(d) *On portions not exceeding 160 acres in area—*

Except as specified for group portions in Clause 63, corners are to be marked by split hardwood pegs 2½ inches square, 18 inches long, driven 14 inches into the ground.

(e) *For marking Main Roads Department Surveys:*

See Clause 112.

57. Where bed rock is met with in post-holes, the posts should be solidly packed up with stones, and rows of stones may be placed in the direction of boundary lines. Rocks at corners are to be marked with a broad-arrow, (point at angle or drill hole) and with pick marks in the direction of boundary lines.

58. All corners, including road corners, are to be referred by bearing and distance to at least one iron pin. Pins are to be placed in the position which, in the opinion of the surveyor, is least subject to disturbance. Full particulars of the position adopted are to be shown in the field book and in tabular form on the plan; bearings are to be shown from the corner to the pin. Where practicable, iron pins are to be aligned in the direction of a boundary or road line and placed at the exact distance of five links from the corner (vide also Clause 66).

Two iron pins are to be placed at principal corners; these iron pins are to be not less than ¾ inch in diameter and twelve inches long. In country lands, pins are to be driven into the ground 18 inches, i.e., with the top six inches below the surface. (See also The Survey Co-ordination Act and Regulations re permanent marks.)

59. The nearest suitable tree to a corner post or peg should be selected and the bark removed in the form of a shield, about five feet from the ground and exactly facing the post. On this barked space the broad-arrow and portion number in arabic numerals not less than four inches high shall be cut at least half an inch deep into the heartwood. In surveys for the Commonwealth Government a bar is also to be cut below the broad-arrow. Horseshoe marks shall be cut into the heartwood on the other sides of the tree, about four feet from the ground—on large trees three such marks, on smaller trees a fewer number. For the purpose of re-establishing and locating the corner, the bearing to the nearest minute of arc and the horizontal distance to the nearest tenth of a link shall be observed, measured and recorded to the post from a chisel cut in the centre of a bench mark cut well into the heartwood at the base of the tree and exactly facing the post. The marked tree should preferably be located within the boundaries of the portion but failing this the most suitable tree shall be utilised.

60. At a corner common to two or more portions, a reference tree shall be marked for each portion, but not more than two trees need be marked at any one corner.

61. Should no suitable tree whatever stand within a radius of two chains of the corner, the broad-arrow and the portion number or numbers shall be cut into the post or peg.

62. If a large tree stands exactly at a corner it shall be marked as directed in Clause 59 with an iron pin or pins well clear of and referenced to the corner. (Clause 58.)

63. Where groups of portions, the areas of which do not exceed one hundred and sixty acres each, are under survey in timbered country, only principal external corners, not exceeding four in number in each group, should be marked with posts, as detailed in Clauses 56 to 58, provided that such corners should not, as a general rule, be at a greater distance apart than sixty chains. All the other corners are to be marked by split hardwood pegs, eighteen inches long and two and a-half inches square, driven into the ground so as to leave four inches of their length above the surface. A reference tree to each such corner peg is to be marked in accordance with Clause 59. Should there be no suitable tree available, the post or peg at the corner is to be marked, as specified in Clause 61. Iron pins should be inserted as specified in Clause 58.

64. Four of the principal corners of a portion shall be marked as prescribed in Clause 56, but at all other corners, split hardwood pegs, eighteen inches long and two and a-half inches square, are to be driven to within four inches of the surface of the ground. Adjacent to all these corners, iron pins shall be placed and a reference tree or trees marked. Posts are not required at corners of portions of ten acres or under; pegs as above are to be substituted.

65. To avoid destruction when rabbit fence lines are being cleared, reference trees at the corners of grazing farms should, where possible, be selected at a greater distance than twenty links from the post.

66. In brigalow and other country where the lines are cleared by bulldozer before erecting the fence, thereby destroying all survey marks, care must be taken to select suitable reference trees beyond the limits of such clearing.

Further, in addition to placing them near corners (Clause 58), iron pins are to be placed and referred to the line peg at distances not over 40 chains apart—i.e., at the peg for the mile tree and at the half mile in between. Where practicable, such pins are to be placed on the line distant 5 links from the peg. Where there is a possibility of disturbance during the construction of rabbit-proof or other netting fences, iron pins should be placed 5 links square off the line. The position of each pin is to be recorded in the field book and shown on the plan.

67. When the boundary of a portion crosses a tract of country that is inaccessible, the boundary should be surveyed and marked on either side of, and up to, the inaccessible place, posts and reference trees being established at the terminal points, which shall, when practicable, be connected by a traverse survey detouring the obstacle.

68. To avoid inaccessible tracts, the direction of boundaries may be varied and carried by marked lines along the top or the base of cliffs or precipices, but in the case of selected land, previously designed, the boundaries should be adhered to as closely as possible.

69. Traverse lines, following watercourses, should be as long as practicable, within an offset limit of three chains on country lands and one chain on town or suburban lands. Where short bends cause these limits to be exceeded, subsidiary traverse lines should be run. Offsets should be taken at intervals of two chains but at shorter distances if necessary, to define correctly the irregularities of the watercourse and should be either stepped or chained. At traverse corners the offset should be taken on the half angle. (See Clauses 31 and 71).

## 12 Rules and Directions for the Guidance of Surveyors

Where on resurvey a considerable change is noted in the position of a watercourse, all relevant circumstances should be fully reported.

70. As it is desirable to establish uniformity of practice in the measurement of frontage watercourses, it is directed that where a watercourse forms the boundary of any parcel of land, the measurements shall be to the edge of the bank. In this regulation, the term "bank" means the bank which limits the main or principal watercourse under normal conditions as indicated by the normal water level, or the water mark, or any bed of shingle, sand or mud, as the case may be.

Offsets shall also be taken to the opposite bank of the watercourse, provided that when this is not practicable, the average width shall be noted in the field book and plotted on the plan.

71. All watercourse traverses should be carefully effected, offsets being chained or stepped from the traverse line to banks, other natural features, tracks or fences. The angles should be marked with hardwood pegs, eighteen inches long and two inches square, driven fourteen inches into the ground, the tree nearest to each peg being blazed with three horse-shoe marks, the centre one of which should face the peg.

On traverses along watercourses which form boundaries, reference trees, as directed in Clause 59, should be taken at intervals of from 20 to 30 chains when practicable and marked broad-arrow over T and the station number, e.g. T. 21. See Clauses 31 and 69.

Where there are a number of short lines, reference trees are to be taken at intervals of from 20 to 30 chains but not less than 20 chains. On a 40 chain line a reference tree is to be taken at 20 chains, and where lines exceed 40 chains at intervals of from 20 to 30 chains.

72. The edges of fresh-water swamps are not to be adopted as frontage boundaries. Portions abutting on to such are to be surveyed irrespective of them, excluding or including such swamps or parts of them, and are to be defined in conformity with the local design.

73. The boundary lines of portions fronting lakes or lagoons required for public purposes shall be defined by marked lines at a distance of not less than 150 links from the normal water's edge, so as to allow the free passage of stock along the margin. In country infested with noxious weeds a less width may be adopted.

74. An esplanade not less than 150 links in width must be provided above high-water mark along the seacoast, tidal rivers and creeks. This esplanade should not be marked unless instructed, but an area sufficient for the esplanade must be reserved in the portion or portions and indicated on the plan.

Where there is a possibility of a through road connection with construction a surveyed width of not less than 250 links is required.

75. Sandy beaches, mangroves, bare mud-flats, and salt swamps are generally to be considered as being below high-water mark, but land that can be easily reclaimed, small patches of mangrove, or mud-flats, nearly or quite isolated from the general contour of high-water mark, may be dealt with as being above it and may be crossed by esplanades, or be included within the boundaries of portions.

76. Surveyors should unfailingly advise the Surveyor-General of all lands that should be reserved for town sites, natural or artificial water supply, building stone, road-metal,

gravel, camping, State schools, recreation, trigonometrical stations, State forests for the preservation of flora and fauna, crossings in watercourses, lakes, waterfalls, spots of unusual beauty, or for any other present or future public purpose.

77. The survey of one or two isolated portions should be connected with previously surveyed areas if such exist within two miles. The survey of large groups of portions should be connected with previously surveyed areas if existent within five miles. If there be no such previously surveyed portions, connections should be made with a marked tree on a feature survey, or to any other point the position of which has been previously determined. Connections should be made by theodolite survey, preferably following a road or a natural feature. Where there are no roads or natural features, connecting surveys should be as direct as possible. Connecting traverses and traverses generally effected with the theodolite and chain should be marked at the angle points with pegs, two inches by two inches and eighteen inches long, driven fourteen inches into the ground. Trees with a distinguishing letter should be marked at intervals of about one mile and referred to the angle points.

78. Should a road be traversed for this purpose, one side of it may, if advisable, be also surveyed and marked in addition to the traverse, which, provided there is no reason to the contrary, should in such a case be effected with the prismatic compass—the theodolite survey of the marked side forming the connection required.

79. Surveyors are expected to see that their work is properly connected with former road and portion surveys, with definite and known points on railway and telegraph lines and with the marked trees (when such are found in the vicinity) of previous feature surveys, including preliminary surveys for designs. Also, when a surveyor is effecting surveys along a watercourse or road, on the opposite bank or side of which there are previously surveyed portions, connections to such previous work should, if possible, be made—either by actual survey or by bearings from the work in progress to a clearly defined point on the old work. When it can be conveniently done, the meridians of the old and new work should also be compared. The connections with previous work should be clearly shown on the plan, together with sufficient information to show that the old work has been properly identified.

80. When carrying out instructions for the survey of portions which have already been partly surveyed, surveyors should see that resurvey of old boundaries is kept to a minimum consistent with allowing an ordinary selector to follow and fence such old boundaries.

*(e) Town and Suburban Lands*

81. Before the permanent work on any survey of town or suburban lands is commenced, a design of the proposed arrangement of sections and streets, based, if necessary, on a preliminary contour survey, and accompanied by a detailed report, is, if required, to be submitted for the consideration of the Surveyor-General.

82. Where new towns are to be located, the permanent survey of town sections shall be preceded by the astronomical determination of the true meridian by eastern and western solar or stellar observations. The county meridian (see Clauses 37 and 38) is to be adopted as the datum of such survey.

#### 14 Rules and Directions for the Guidance of Surveyors

83. Towns should be laid out in rectangular sections on lands that are fairly level, but to some extent in accordance with the surface conformation and natural features on uneven ground.

84. Sections should be about 10 chains long and generally not more than 4 chains deep, with 20 link truncations at section corners.

Where sections are appreciably over 10 chains in length, a pathway about mid-section should be provided.

Allotments should be from 24 to 40 perches in area according to probable use and climatic conditions (i.e. 32 to 40 perches in the far north and far west) and the requirements of the Local Authority under The Local Government Acts.

Under special conditions, the depth of sections may be reduced to 3 chains, but in such cases, allotments should be given an increased frontage, and the areas should not be under 20 to 21 perches.

Laneways may be provided in business sections, but not in residential; the section depth should not be increased because of the laneway.

Allowances should be made in Business Sections for parking, where practicable, by recessing the building line back from the through alignment of the street.

Where shops are to be of the lock-up type, the owners living elsewhere, the area of allotments should not exceed 12 perches; in such cases a laneway is essential.

85. Streets, where practicable, should be located on the lower levels, so that the surface water may drain from the allotments into the street channels, which, in towns without underground sewers, are the means usually provided for carrying off storm waters. In certain cases it would be an advantage that streets follow the contour of, and include the minor watercourses; the lower levels along which storm and soakage waters flow would thus be under the control of municipal authorities. Consideration should be given to the provision of drainage areas where necessary.

86. The minimum width for each class of road shall be provided in accordance with the Local Government Acts.

87. Requisite areas should be reserved for public buildings and utilities, schools, open space gardens and sports grounds and esplanades along rivers and creeks—generally in accordance with modern town planning principles.

Sufficient reserves for parks, gardens, sports grounds, etc., should be provided to break up the masses of buildings by open spaces.

88. Previously erected improvements should be included in allotments when so doing does not greatly interfere with the symmetry of the design.

89. The building lines of streets and the boundaries between allotments are to be cleared to a width of three feet by the removal of scrub, undergrowth and trees less than six inches in diameter. The trees standing nearest to the line and those left standing on the line are to be marked as directed in Clause 52.

In timbered country it is desirable to mark reference trees with the section number to indicate the position of section corners. (See Clause 59.)

90. The principal section corners are to be truncated and marked as follows:—

- (a) An iron pin, as directed in Clause 58, is to be driven into the ground to a depth of 18 inches (i.e., top of pin to be six inches below the surface), where in the opinion of the surveyor it is least likely to be disturbed. In most cases this position may be taken as being on the alignments, 15 links back from the intersection i.e. in 20 link-truncations: when the truncation is other than 20 links, the iron pin should be placed in the same 5 links relationship to the peg. When iron pins are to be placed in formed footpaths or roadways it has been found preferable not to bury the pins but to drive them flush with the bitumen or other sealed surface.

At the truncation distance from the intersection, hardwood pegs 3 inches by 3 inches by 18 inches long are to be carefully aligned and driven 14 inches into the ground. These pegs are to be marked with the section and allotment numbers cut into the wood—the former in Roman numerals facing the street; the latter in Arabic numerals facing the allotment.

- (b) Except that, in the case of a flat intersection, the corner need not be truncated. Such corners are to be marked with a 3 inches by 3 inches hardwood peg as above and an iron pin, driven and referenced as directed in Clause 58, is to be placed in the position least likely to be disturbed.

91. Corners of allotments are to be marked as follows—hardwood pegs, two inches square and eighteen inches in length, are to be driven fourteen inches into the ground. All pegs are to be marked with the numbers of the allotments, cut into the wood in Arabic numerals two inches in height or may be painted with black numbers on a white background. The numbers shall face the allotments they represent.

92. If rocks, that cannot be removed, are found to be situated at corners of either sections or allotments, they should be marked, as directed in Clause 57, with broad-arrow (point at angle or drill hole) and pick marks in the direction of each boundary, and if practicable, the section or allotment number should be cut into the rock.

93. As permanent datum points in connection with the survey of town sections, not less than 3 permanent survey marks, of the types referred to in Clause 15 of the Survey Co-ordination Regulations, 1955, are to be placed so as to be intervisible.

94. The position of these permanent marks relative to the pegs forming the actual corners of the section are to be noted in field books and shown on plans.

95. When additional sections are being surveyed in a town, the permanent marks placed in connection with a previous survey should be located and the meridian indicated by them should be adopted as the datum for the new survey work.

*(f) Roads through Unoccupied Lands*

96. Rapidity, safety, and economy of carriage are the objects of roads; they should, therefore, be so located as to enable loading and passengers to be transported from one place to another with the least possible labour and in the shortest time. Roads should therefore be as straight as possible with the lowest practicable grades.

## 16 Rules and Directions for the Guidance of Surveyors

It is obvious that the greatest care and judgment are necessary in the selection and location of roads. To assist surveyors and to establish uniformity of practice, the following directions are to be strictly observed:—

Roads surveyed or mapped out on Crown Lands should be so located that—

- (a) The natural profile of the roadway does not exceed a gradient of one in 10; or
- (b) The proposed roadway may be improved at a reasonable cost, so that, when formed, the gradients will not exceed one in ten.

As failure to locate the best and most economical route may entail the needless expenditure of large sums of money in construction work, it is imperative that a thorough inspection of the locality be made.

The grading of the road should be carried out with the clinometer and the route traversed with the compass and chain or theodolite and chain, as provided for in Clauses 97 and 98.

In dealing with lands either by actual or preliminary survey, where tracks with gradients exceeding one in ten are in use, it may be necessary to provide for both present and future requirements by the reservation of the tracks and by the survey of the routes which will ultimately be adopted. In mountainous country more detailed methods should be used showing the contour lines. The route should be located by following the gradient and taking section and cross section detail with the clinometer, in conjunction with a compass and chain traverse of the route, which may then be plotted showing the contour lines. From this information the most economical centreline can be projected for subsequent marking.

97. For the purpose of avoiding unnecessary angles, and to ensure the precise location of road lines, preliminary compass or theodolite traverse surveys may be made when justified by circumstances. Before commencing the permanent survey of road lines such traverse surveys should be plotted on a large scale, with all information gained in the preliminary survey also accurately plotted and road lines should be laid out on the plot as long as compatible with the inclusion of the best route as the centre line of the road. When previously projected roads are being surveyed, the bearings and lengths of the side laid out, as directed in Clause 30, should be adhered to as far as practicable, connections to the original traverse being made at suitable intervals to ensure the accurate location of the road lines with regard to the traverse. These connections must be clearly shown in the field book and on the plan.

98. Preliminary traverse surveys for road location should, when expedient, be effected with the compass. The theodolite should be used only when conditions require the accurate location of road lines. (See Clause 78).

99. The route selected should be that which combines easy ruling gradients with economy in construction and straightness in direction. Practicable road access should be provided to each portion. Access must also be provided to vacant Crown Land, to watering facilities and for any other public purpose.

100. Existing tracks should be maintained unless examination of the country discloses a more suitable route. The requirements of Local Authorities must always be respected and satisfied as far as may be possible; however should such



requirements appear unreasonable or unwise the matter should be referred to the Surveyor-General, the survey work being left in abeyance pending his decision.

101. All road improvements are to be kept well within the limits of the road as defined by survey.

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

103. Roads through reserves for camping or other public purposes should not be surveyed, unless specially instructed, but the position of the road should be indicated, approximately, on the plans of adjacent surveys.

104. At the crossings of watercourses, where bridges or causeways are not already provided, it is desirable to increase the width of all roads less than three chains wide by diverging lines, thus providing more scope for choice of cuttings, &c. When a road ends at or crosses a watercourse boundary, the part of the watercourse within the road should be traversed.

105. Reserves for water, camping, schools, timber, quarry or any other necessary public purpose, should be liberally provided in suitable situations on all main and other roads.

106. The reservation of areas for road purposes is inadvisable, except in special cases, when the reservation is made along a specified route. As a general rule, all necessary roads are to be surveyed, the practice of reserving areas for road purposes is to be discontinued.

107. Ample provision, in the western pastoral districts, is to be made for travelling stock. The width of roads shall be determined after consultation with the Local Authority and due consideration of all the governing factors.

108. Roads exceeding three chains in width, whether intersecting or forming boundaries of portions are, unless otherwise directed (See Clause 49), to be aligned, measured and marked on both sides. Where one side only is a boundary, the opposite side need not, of course, be marked except at the corners. Roads three chains and under in width and separating portions under survey at the same time, are to be marked on both sides. Unless otherwise directed, roads three chains and under in width intersecting portions are to be aligned, measured and marked on one side only, the opposite side being indicated as directed in Clause 109. Road widenings and roads of irregular width should be surveyed on both sides.

109. All road corners are to be marked by posts or pegs (Clause 56), iron pins and reference trees. Where only one side of a road is run, the angle points of the opposite side should be similarly marked. Where no tree is available the post or peg must be marked as directed in Clause 61.

110. In the survey of roads ten chains and under in width, secants from angle points are to be carefully run out with the theodolite and chain and the bearing and length thereof entered in the field book and shown on the plan. The measurement of secants across roads wider than ten chains is optional, but such measurement may not be charged for.

111. Where the opposite sides of roads, previously surveyed on one side, are to be marked and the angle points on such opposite sides have not been marked by the previous surveyor, it may be necessary to resurvey the first side, or parts of it, to obtain a datum from which to lay off the secant lines, and so determine the angle points on the side to be surveyed. The original lines, however, should not be re-run unless absolutely unavoidable.

112. Surveys for the Main Roads Department are to conform to these Rules and Directions, except that:—

- (a) Unless main roads are fenced the corner should be marked by pegs 2½ inches by 2½ inches by 18 inches long; if fenced, the corner fence post on one side should be adopted, if practicable, the adopted fence post to be branded with broad-arrow. In laying off the secants, where the opposite fence is at a less distance than the width shown on the blue print, the correct width is to be pegged. In agricultural or otherwise valuable land, where the opposite fence is at a considerably greater distance than the blue print shows, the fence is to be adopted; where the discrepancy is only two or three links, the correct secant width should be pegged;
- (b) If the land is grazing country and no valuable improvements are affected, the correct secant width should be pegged;
- (c) In all cases where the correct secant is laid down, an accurate connection should be made therefrom to the corresponding fence corner.

In every case an iron pin should be inserted and a reference tree taken where available.

The offsets shown on the print are to be adopted in the case of unfenced roads in flat country. Generally, no chord should approach the centreline closer than 25 feet, but this may be reduced to 20 feet to avoid shifting fences. In rough country where it is necessary to cut and fill for grade purposes, the offsets shown on prints are generally sufficient to accommodate all earthworks, side drains, etc. When the survey is made before construction, the offsets are to be adopted. When made after construction, all toes of banks, tops of batters, catch drains, inlets and outlets of drains, should be included in the resumption. This should be specially noted in the case of mountainous sections where excessive rainfall has caused side slip in cuttings or subsidence in banks. Should a permanent building be needed for road purposes—i.e., for road patrols, maintenance, etc.—such building is to be included within the road boundaries by a road widening if necessary. Borrow pits, spoil dumps, metal and screening reserves should be included in the road widths. The survey of the road lines must be connected to the Main Roads centre line survey. In cases where the centre line pegs are shifted during construction, sufficient accuracy may be obtained by measuring offsets from centre of formation. In sidelong roads the centre line is two feet closer to the outside edge of road than to watertable. Where metalling or metal boxing exists, the centre is 6 feet from the outside edge of curves for single track roads. The nearest foot is all that is required for such offsets. Intersection pegs are rarely shifted and foremen generally offset all centre line pegs before shifting, and have records of such offsets. If any extensive variation is made in positions of lines from those shown on the working plan, the foreman or engineer in charge of construction (if available) should have the pegged corners indicated to him. All lines necessary for the purpose of giving effect to the exchange proposal as indicated on plan must be surveyed. Connections and records of the chainage of the centre lines should be made at intersections of the centre line with boundary lines of portions through which the Department's road survey passes. These connections should also be recorded on the plan.

Unless otherwise directed by the Commissioner, the minimum width to be adopted for any main road is one and a-quarter chains (82½ feet).

If any material question arises which is not dealt with in the instructions, it should be referred to the local Main Roads Engineer, the nearest District Office, or to Head Office.

113. Surveyed lines forming the sides of roads are to be marked, posted and pegged as directed for the boundaries of portions (Clauses 52 and 59). Reference trees are to be selected at corners; the bearings and distances from such trees to the corner posts are to be determined and recorded as directed (Clause 59). The trees are to be marked with the broad-arrow and letter R and, where the road intersects or forms a boundary, with the portion number also.

*(g) Roads through Leasehold and Freehold Lands\**

114. Road surveys through leasehold and freehold lands are generally initiated at the instance of Local Authorities, to whom surveyors should give due written notice of the date on which it is proposed to commence the survey, so that the Local Authority may, if desired, send an officer to inspect the proposed route with the surveyors.

115. Where road and other resumption surveys are to be effected the surveyor will be advised as to his duties in regard to the notice, to be served upon the owner, of intention to enter upon the land for the purpose of survey.

116. Road surveys through freehold and leasehold lands are, as regards the general conduct of the work and the marking thereof, to be effected in accordance with these Rules and Directions. Through freehold land, they must also conform to the Real Property Regulations contained in By-law No. 7.

117. Where roads are to be surveyed through leasehold and freehold lands (or either), surveyors should carefully inspect the country along the proposed routes. In selecting roads, the first consideration should be public requirements and the conditions favourable for traffic; the second, the least possible interference with or injury to, private property.

118. The meridian to be adopted for road surveys through freehold and leasehold lands shall be the meridian of the survey of one of the portions through which the road passes. One of the principal boundaries of the portion should be run out as far as necessary with the theodolite, and its meridian adopted.

119. Roads through leasehold lands, unless otherwise directed, are to be marked in accordance with Clause 108 and as specified in Clauses 52 to 58 and as directed in Clauses 109 and 110.

120. Roads surveyed through freehold lands are to be marked on both sides, in accordance with the directions in Clauses 52 to 58.

121. The survey of roads through leasehold and freehold lands shall be connected with all marked boundaries intersected, the connections being made to the nearest corner or other definite mark, the position of which is given. The resurvey of severances is not required unless serious errors are disclosed.

The following general rules are set out for guidance:—

- (a) When the road intersects a surveyed boundary, only such work is necessary as to re-establish that boundary and intersect thereon, together with a connection to the nearest corner or other definite mark, the position of which is given;

\* The Directions under this heading should be read in conjunction with those contained in "By-law No. 7."

- (b) Where a narrow road intersects a boundary in close proximity to a definite mark, sufficient accuracy may be obtained by laying down the opposite corner on the relative bearing. This direction is particularly applicable to surveys in areas where the nature of the land does not warrant the additional expense which would be incurred by re-running a long length of original lines. The necessity or otherwise of re-running the original boundary is, however, a matter for the surveyor's discretion, after consideration of the whole circumstances of the case. Where such action is taken, an explanatory note should be entered in the field book;
- (c) Where the road commenced from some known point and abuts on to, or crosses, a creek which forms a boundary, a re-traverse of the creek to obtain a close of the severance is not required. If, however, the terminal points of the traverse line intersected are in existence, the road line should be connected thereto;
- (d) In the case of a road widening at a creek, the creek bank included within such widening should be re-traversed, if necessary, in accordance with Clause 104;
- (e) In cases where a road within a portion is to be amended, it will be sufficient if the terminals are definitely located; intermediate intersections are not required.

122. When surveying roads through leasehold or freehold lands, surveyors are required to report fully on the nature of any improvements or features located on the road, or severed by the road lines.

*(h) Re-surveys, Re-establishment of Old Boundaries, and Real Property Work\**

123. In the re-survey of lands held under grant, the surveyor must adhere to the principle that the boundaries originally marked on the ground by the Government surveyor are the true boundaries, although the bearings and lengths of such boundaries may not, on re-survey, be found to agree with the bearings and lengths recorded on the original plans. But where it is evident that some of the original marks found have been placed in error and do not reasonably represent the metes and bounds of the land conveyed, it may be desirable to ignore these marks. In this case a full report of the circumstances shall be made to the Surveyor-General, for approval of the proposed action. In the re-instatement of original boundaries the procedure detailed in Clauses 124 to 130 shall be practised.

124. Where the corner post and reference tree are found, the position of the post shall be checked by comparing its actual bearing and distance with that originally determined and recorded on the plan.

125. At a corner where the reference tree, or an iron pin only, is found, the post shall be re-instated on the originally determined and recorded bearing and distance therefrom.

126. Where neither post at corner nor reference tree is found, but indications of the original survey are afforded by line-pegs, lockspits, or blazed trees, boundaries and corners must be re-instated in correct relation to such marks, but, before adoption, these shall be checked by measured reference to existing adjacent corners or boundaries.

\* The Directions under this heading should be read in conjunction with those contained in "By-law No. 7."

127. Where no marks of original survey can be found, it must be shown that the boundaries and corners have been re-instated in correctly measured relation to adjacent boundaries, to those situated on opposite sides of roads, to fences, or to such other evidence of original location as may be found.

128. The position of all original marks found must be shown in the field-book and on the plan.

129. Where re-survey shows lengths of boundaries in excess of original lengths, field-notes and plan must afford satisfactory evidence that the excess is not due to encroachment on adjoining lands or roads. In the absence of sufficient original marks, this shall be ascertained by the actual measurement of so much of the boundaries of adjoining lands as is necessary to ascertain whether such boundaries contain their granted lengths in full.

130. If part only of the land in a grant or a certificate of title is subdivided, the subdivisional survey must be connected by actual survey:—

On country lands—

To a corner or corners of the previous survey.

On town lands—

To a corner or corners of the previous survey, or to the corners of sections, or to the intersections of streets or lanes, or to permanent marks established by alignment, standard traverse, or other official survey.

131. Should the location of a common boundary be in dispute between the owners of adjoining lands, all particulars of occupation and evidence of original location, must be shown on the plan.

132. The actual measurements made and the bearings observed in the field, are to be shown on the plan in black figures, the original lengths and bearings being shown in brown and marked "original" where this would not be obvious on a photographic copy.

133. Where it is necessary to explain matters in connection with re-surveys, a special report should be forwarded with the plan.

*(i) Astronomical and Geodetic Observations*

134. All surveys should be referred to the true meridian by astronomical observation, the greatest possible care being devoted to observation work, so that the results obtained may be precise and accurate.

135. The readings taken during the observations should be recorded on a convenient page of the field book, and the observations are to be calculated on the forms supplied for this purpose.

136. The number of observations required by the Surveyor-General to be taken on any survey or group of surveys is set out in the following general rules, and satisfactory reasons must be given when these requirements are not complied with.

## 22 Rules and Directions for the Guidance of Surveyors

137. When the datum of survey is based upon the county meridian determined astronomically, four complete solar or stellar observations taken at the same station in pairs, east and west of the meridian, and calculated separately will be required. Such observations shall be termed "Observations for Datum."

138. When the datum of survey is the (re-established) meridian of an adjoining or a connected survey, not based upon the county meridian, it is required that the new work be referred to the true meridian. For this purpose not less than three complete solar or stellar observations, east or west, should be taken at the same station and calculated separately. Such observations shall be termed "Observations for Variation."

139. When the datum of survey is the (re-established) meridian of an adjoining or connected survey, effected upon the county meridian, observations are required for the purpose of check. So also, in extensive surveys, observations are necessary as checks upon the work. For these purposes three complete solar or stellar observations, should be taken and calculated—in the former case at a suitable station in the new work and in the latter at intervals of about seven miles in even country and of about three miles in rugged country. Such observations shall be termed "Check Observations."

140. In addition to the observations herein prescribed as officially required by the Surveyor-General and for which rates of payment have been provided, surveyors will find it advantageous to take observations to ensure the accuracy of their work from day to day. In this regard surveyors are advised to become conversant with daylight observations of a star (e.g.,  $\alpha$  Carinae, Canopus) at or near elongation.

141. When observations are necessary for the determination of latitude, two or more stars—in pairs—north and south of the zenith should be observed. But as the maps supplied by the Surveyor-General usually show the latitude of the initial point of the county, the latitude of an observation station may be found by scaling on the map its distance from the parallel upon which the initial point is situated and the necessity for observations for latitude will seldom occur.

142. For the purpose of compiling a chart of Queensland, showing the isogonic lines (connecting the places at which the variation of the magnetic needle from the true north is the same), it may at times be required that the observations showing the differences from true north to the county meridians used on the various surveys be supplemented by readings of the magnetic needle, the results being entered in field notes and a separate record forwarded to the Surveyor-General.

143. Where observations for Magnetic Variation are required, full details as to procedure and instructions will be issued. Observations should not be attempted where there is evidence of local attraction.

144. Theodolite bearings should be observed to visible trigonometrical stations from two or more points on a survey, preferably from corners. If a trigonometrical station is visible from only one point on a survey and its distance from such point does not exceed one mile, a traversed connection should be made to it and the angle which the traverse line makes with a side of the triangulation should be observed and recorded.

### (V) FIELD BOOKS

145. Field books, in four sizes, are supplied at cost price to surveyors by the Surveyor-General. These only are to be officially used and the size used should be in proportion to the extent of the survey of which it is the record.

146. The original field notes, kept in the field, must be furnished by surveyors. If these are indistinct in any particular, the information may be duplicated in the field book and noted as a copy; copied notes only will not be accepted. Erasures in field notes are not permissible, but erroneous entries should be crossed out and correct entries made; the date of alteration shall be entered and initialled.

147. Field notes should be so lucidly kept as to enable a draftsman, without other information than they afford, to draw a true plan of the survey. As they are the primary record of survey, are accepted as evidence in a Court of Law, and are for Departmental reference, they should be precise and complete and kept in a neat and professional manner.

148. A specimen field book is supplied by the Surveyor-General and surveyors are directed to adopt its style and methods, as uniformity in this respect facilitates the work of the examining draftsmen.

149. Country, whether undulating, broken, or rugged; timber, whether open, thick, heavy, or with undergrowths; scrubs, their character and situation, should be especially noted in field books, as the rate of additional payment that may be allowed on such account is based on the information supplied.

150. The first page of the field book should exhibit the following information:—

- (a) The signature of the surveyor.
- (b) Reference to the steel band used on the survey, which should be in the following form:—

The steel band used on this survey agrees in length with standard steel band No. , as determined by comparison made on the day of 19 .

Tape standard length at degrees F.
- (c) Or if the steel band did not so agree, to what extent it differed. The method of its use and the correction applied, should be fully explained.
- (d) The instrument used to define the direction of surveyed lines should be stated, as theodolite or compass, as the case may be.
- (e) The title of the survey, the date of the instruction therefor and the date of the commencement of the survey work.
- (f) When the survey is done in broken periods, it is necessary to note the date of any temporary cessation of the work and the date upon which operations were resumed.

151. The details of the survey work should be prefaced by a description of the datum on which the survey is based and how obtained—i.e. whether astronomically, or by the determination of the meridian of an adjacent or an adjoining portion. If the latter, the surveyor must describe what original marks were found, how they were identified, and to what extent it was necessary to re-instate or replace them.

152. Each surveyed line shall be entered in the field book separately, suitably described, in the sequence in which it is measured, with the number of the station at its commencement and at its completion and with numbered reference to all the pages of the book on which any station reappears through the intersection of lines or the closure of boundaries. (See also Clauses 121 and 155).

24 *Rules and Directions for the Guidance of Surveyors*

153. Diagrams are not to be substituted for the separate entry of measured lines, but should only be used in elucidation of details, except on city or town surveys where internal measurements of sections may be thus shown.

154. Instrumental bearings of lines shall be recorded in degrees and minutes, reading from zero round through east to three hundred and sixty degrees. The actual measured lengths of lines, the angles of elevation and depression, the corrections therefor, the temperature, the corrections for changes thereof, the horizontal lengths of lines, the measurements of offsets to natural features, the bearings and distances from reference trees, measurements made to improvements, and positions of pegs and posts, are all to be clearly shown.

155. 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 in the field notes of the intersecting and intersected lines.

156. The stations from which astronomical observations are actually taken, or to which they are referred, should be specially noted in the field book.

157. Field notes of portions fronting watercourses should clearly show the distance to the traverse line, to the post or peg and, in accordance with the direction conveyed in Clause 70, to the watercourse, with the actual and the average width thereof.

158. The features crossed by or visible from surveyed lines, such as creeks, gullies, flats, hills, ridges, plains, scrubs, etc., should also be noted in the field book.

159. All available information as to the geological formation of the country, the quality of the soil, its suitability for agriculture; the natural herbage and grazing capability; the description, quantity, and value of its timber; the natural water supply, facilities for artificial storage; liability of the lands to flooding; the existence of and area under noxious weeds, etc., should be recorded in the field book.

160. The date of the completion of the survey and the following certificate must be entered at the end of the field notes, and signed by the surveyor:—

This is to certify that the field notes herein contained are the actual results of my observations and measurements in the field.

A.B., Authorised Surveyor

161. Field books of each survey shall be sent to the Surveyor-General with the plans, etc., to which they refer.

(VI) COMPUTATIONS

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

163. Areas of portions, except regular geometrical figures, are to be carefully computed by double longitudes.

164. After accurately computing the exact areas of portions, modifications with regard to fractional quantities, as specified hereunder, may be made.

In portions not exceeding 2 acres—record to the nearest 1/10th perch of the exact computed area.



More than 2 acres, but not exceeding 10 acres—if bounded by right lines, record to the nearest 1/10th perch; if bounded partially by a watercourse, record to the nearest perch.

More than 10 acres, but not exceeding 40 acres—if bounded by right lines, record to the nearest perch; if bounded partially by a watercourse, record to the nearest twenty perches.

More than 40 acres, but not exceeding 160 acres—if bounded by right lines, record to the nearest 10 perches; if bounded partially by a watercourse, record to the nearest rood.

More than 160 acres, but not exceeding 640 acres, if bounded by right lines, record to the nearest 20 perches; if bounded partially by a watercourse, record to the nearest 2 roods.

More than 640 acres, but not exceeding 10,000 acres—if bounded by right lines, record to the nearest rood; if bounded partially by a watercourse, record to the nearest acre.

Exceeding 10,000 acres—record to the nearest acre.

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

166. All calculations, computed or copied on the forms supplied by the Department, shall be forwarded with plans and other records of the survey.

#### (VII) PLANS

167. All plans are to be drawn either by the surveyor himself, or under his supervision, on the plan forms supplied by the Surveyor-General. Unless particularly instructed, Real Property plan forms should not be used.

168. Surveyors' plans are copied at the Survey Office by photography. To ensure that reproductions on a reduced scale are clearly legible, plans must therefore be drawn with ink that is quite black, the lines firmly ruled—hair lines to be avoided—features clearly drawn and figures and lettering in bold open writing.

169. Specimen plans, showing the style and standard of the drafting required which is essential for their satisfactory photographic reproduction, may be inspected at the Survey Office. Plans that do not conform to a satisfactory standard will be rejected, redrawn or amended at the expense of the surveyor.

170. Plans shall be accurately plotted with the north point upwards if possible, and shall show the scale to which they are drawn, as well as that of any diagram thereon. The scale suitable for any given plan is a matter of judgement governed by circumstances. The following should, as a rule, be adopted, but may be varied in special cases. Small details may be shown by diagrams drawn on larger scales.

Town allotments—One to two chains to an inch.

Small portions—Up to 5 acres, 4 chains to an inch; over five acres, 8 chains to an inch.

Country portions—Up to 640 acres, 10 chains to an inch; over 640 acres and up to 2,560 acres, 20 chains to an inch; over 2,560 acres, 40 to 80 chains to an inch.

26 *Rules and Directions for the Guidance of Surveyors*

Road Surveys—2 to 10, or 20 chains to an inch.

Feature Surveys—As circumstances may require.

Sketch plans for designs should be drawn to a scale sufficiently large to show clearly all necessary details—good clear pencil plots will generally be sufficient unless otherwise instructed. The proposed arrangements of portions or allotments may be shown on paper tracing overlay. The completed design will be drawn in the office.

171. Where there are no adjacent surveys, and the datum of survey work is determined astronomically, the variation from true north of the meridian adopted shall be shown on the plan.

172. Where the meridian of a boundary line of an adjacent survey is adopted as the datum for new survey work, such boundary line shall be shown on the plan, and the word "Datum" shall be written along it. Such meridian should be compared astronomically with the true meridian and its variation therefrom shown on the plan.

173. Where, for any good reason, the variation of the meridian of the new survey work is not so determined, the variation of the meridian of the adjacent survey adopted as datum, if known, shall be shown upon the plan, with a note as to how the variation was determined.

174. Surveyed boundaries are to be shown by firm black lines, with the bearings and lengths written along them. The unsurveyed parts of boundaries should be shown on plans by broken lines and the means that were employed to determine the bearings and lengths thereof should be indicated.

175. The intersection of boundary lines with one another or by a road and the distances from points of intersection to the nearest corners are to be shown, together with the angular closure as observed on the ground. Such bearings should be shown as "readings" in black figures. For the purpose of comparison if the bearing of the intersected lines has been determined from a previous survey this bearing should be in brown and noted as "original".

176. Plans of portions fronting watercourses are to show distances to posts or pegs and to traverse lines, with distances to the bank to the nearest 5 links and the actual or average width of the watercourse noted.

177. Surveyed roads are to be shown by firm black lines with the bearings and lengths written along them; unsurveyed sides are to be ruled in broken black lines. The width of the roads should be written neatly along them.

178. Road secants and all traverses are to be shown by firm blue lines, broken blue lines for road and offset traverses. The bearings and lengths of road secants and traverse lines are to be written on the plans in the tablets provided for the purpose. As blue does not re-produce on photographic copies, bearings and lengths of lines must not be shown in blue on the face of the plans.

179. All the corners of portions, town and suburban sections, allotments, points of intersection of boundary or of other surveyed lines, angle points on traverse and road surveys are to be shown on plans by small black circles. All station numbers are to be shown in brown figures. Astronomical stations are to be shown by brown triangles. Surveys of roads or road deviations are to be shown on separate plans where they are in different portions and are not connected or adjacent. Roads should be shown in a continuous manner on plans and not in broken sections out of relation to each other.

180. The bearings of lines to be shown on the plan are those instrumentally observed and recorded in the field book, expressed in degrees and minutes, reading in a clockwise direction. The lengths of lines so shown shall be the horizontal lengths obtained by the calculated reduction of the actual measurements in the field, and are to be expressed in links and decimal fractions thereof. On country lands generally, bearings are to be shown to the nearest minute and distances to the nearest tenth of a link, similarly on town areas, road surveys and regular shaped allotments. (Clause 154.)

On irregular town allotments bearings are required to the nearest half minute with distances to the nearest hundredth of a link. An irregular allotment is one (*a*) which is not rectangular, (*b*) where the opposite sides are not parallel, (*c*) where there are more than four sides, and (*d*) where closure is necessary to check the accuracy of the dimensions. In first class city areas, bearings should be shown to the nearest ten seconds and distances to the nearest hundredth of a link.

Original bearings and distances of lines that have not been re-surveyed should be shown in brown and marked "original", where this would not be obvious on a photographic copy of the plan. Original boundaries of roads closed or widened are to be shown on plans in fine broken brown lines. This information will then be reproduced on the photographic copies.

181. Bearings to distant points, such as trigonometrical stations, hills, beacons, etc., computed connections with adjacent survey work, the unsurveyed parts of boundaries in inaccessible country, are to be shown by broken black lines, with all computed bearings and distances written along such lines in black figures.

182. Lines of coasts, banks of rivers, creeks, etc., are to be shown on plans in firm black lines when their margins have been exactly determined and by broken black lines when located approximately. Opposite sides of watercourses should be sketched on plans with an arrow pointing down stream.

183. The locally known (or aboriginal names) of rivers, creeks, lakes, lagoons, hills, camping places, crossings, bridges, etc., should be written on the plan—the correct orthography to be ascertained and adhered to. Where possible the meaning or origin of the name should be given in the forwarding letter.

184. The following spelling of timber names is to be adopted:—Bauhinia, Belar, Bendee, Boree, Brigalow, Carbeen, Coolibah, Gidya, Mulga, Quandong, Tea-tree, Yapunyah and Yarran.

185. Hills, undulations, creeks, gullies, edges of scrubs, timber, swamps, land liable to inundation and other features, as determined by actual measurement, are to be carefully sketched in black on plans, in such a manner as not to interfere with the lettering. The approximate position of leading features within the portion under survey should be sketched as accurately as possible from the design supplied with instructions for survey and from the local knowledge acquired during the survey. A description of the character of the country affording information of use to a prospective occupier of the land and including particulars regarding the nature of the soil, should be neatly written across the face of the plan.

In showing details with regard to features, etc., care should be taken not to overburden the plans with descriptive writing—discriminate between the plan and the field book. The latter should contain full details so that the additional allowances claimed may be verified; on the plan, however, more general descriptions for the information of the selector and others may be given. These should, therefore, be concise but clear and sufficient for the purpose in view and written in a bold, open style that will bear reduction by photography, not being cramped and crowded together with useless repetition of the same phraseology.

186. The position of buildings, fences, cultivated areas, wells, bores, or other improvements is to be shown on plans, diagrams showing details being added where necessary. For the sake of uniformity the symbols to be used for improvements, features natural or artificial, telephone lines, railway and road construction, etc., shall conform to Appendix "A" of the Survey Co-ordination Regulations 1955.

187. The portion number, the area and a general description of the country should be written on the face of the plan, except on town and suburban plans. (See Clauses 191 and 192.)

188. The word "lot", which is specially applied to lots for sale, is not to appear on surveyors' plans. "Allotment" is to be applied to town and suburban allotments, and "portion" to country portions.

189. Areas are to be written within the boundaries of the portions to which they relate, in the following manner, viz.:—

165	3	0	
5	3	0	Surveyed Road
160	0	0	

190. The farm numbers, names of selectors, dates of instruction for survey and of transmission of plan, meridian observations, reference to corners, road secants and traverses, are all to be neatly written in black ink in the tablets provided on the plan forms for these purposes.

191. Should the information gathered in respect of the conformation of the country, the geological formation and the soil, vegetation, improvements, etc., exceed that which can be clearly shown on the face of the plan, it should be neatly written on the plan in tabular form.

192. Town and suburban plans are to be drawn in a clear, open style, with the features, etc., shown as detailed in Clause 185 but no descriptive writing is to appear across the face of the plan, the character of the country being stated in a note placed in a convenient position. The section numbers are to be shown in Roman numerals for town sections and Arabic numerals for suburban sections. The positions of Permanent Marks are to be indicated by a double circle and connections to same, together with those to iron pins are to be tabulated. All traverse lines are to be shown in firmly ruled broken blue lines and dimensions tabulated. Suggested names of towns and streets are to be shown in pencil or stated in the forwarding letter, in which the origin or meanings of the names, if obtainable, should also be given.

193. The title of the plan is to be written in the space provided for the purpose and the printed certificate thereon is to be signed by the surveyor. On plans of town sections Arabic numerals are to be used in the title and Roman numerals on the face of the plan.

194. As surveys are completed, the plans thereof and all other documents relating thereto, are to be forwarded promptly to the Surveyor-General (see Clause 201). Delay in this respect could cause much inconvenience.

(VIII) CORRESPONDENCE

195. All correspondence should be addressed to the Surveyor-General, who should be kept advised of any change in the postal or telegraphic address of surveyors working for the Survey Office.

196. It is required that surveyors immediately acknowledge the receipt of official instructions. Telegrams, memoranda, or other communications received from the Office are also to be attended to promptly. If instructions do not contain sufficient information to enable the survey to be efficiently and economically performed, application for the information required should be made immediately after receipt thereof.

197. Official letters, in reply, should be written on paper of foolscap size, and on one side only, with a marginal note descriptive of the subject therein referred to. The official reference, initial letters and date of previous correspondence should also be noted in the margin.

198. Each letter is to be restricted to one subject and in forwarding details of surveys carried out under separate instructions, each case is to be complete in itself, accompanied by a separate forwarding letter, except that, for purposes of payment, several otherwise distinct cases may be included in one voucher (see Clause 200 (g)).

199. Immediately after the end of each month, every surveyor shall forward promptly to the Surveyor-General, a Progress Journal on the printed form prepared by the Survey Office for that purpose. The following information is to be clearly shown in the Journal.

- (a) Work performed. All work effected during the month is to be shown under this heading, also all work effected during previous months, the plans of which have not been actually posted to the Office, the month in which the work was effected being indicated.
- (b) Work in hand. All work for which the surveyor holds instructions must be shown under this heading, and those surveys that it is anticipated will be taken in hand during the current month must be indicated alphabetically in the order in which it is proposed to effect them.
- (c) Plans forwarded to the Office during the month, also instructions cancelled, withdrawn, transferred or returned, must be indicated in the proper columns.
- (d) Information should also be afforded as to the approximate date it is expected to complete all work, for which instructions are held. This information should also be supplied (by letter, if necessary) at least two weeks before completion.
- (e) Information regarding the surveyors' work, the weather generally prevailing, the condition of the country and travelling facilities should be included.

200. Plans of survey work effected for the Department are to be sent to the Surveyor-General, together with all other records connected therewith, viz.:—

- (a) Forwarding letter.
- (b) Field Book
- (c) Calculations of closure and of area, secants and opposite sides of roads.
- (d) Records of astronomical and magnetic observations.
- (e) Report.
- (f) Instructions for survey, designs, tracings, lithographs, and other auxiliary information supplied to aid the surveyor in his duties.
- (g) Vouchers in triplicate. (Excepting that several cases may be included in one voucher, and that vouchers may be forwarded for collection through an authorised agent or bank, but one copy must always accompany the plan of the work.) Where vouchers total £30 or under, they are to be forwarded in duplicate.
- (h) Road reports if necessary.

201. Plans should not be folded but rolled, and the packets containing them and the related documents should be neatly made up in such manner as to prevent damage, securely fastened, legibly addressed, and postage sufficiently prepaid before transmission to the Surveyor-General.

202. Fees for surveys effected in accordance with this By-law and undertaken on behalf of, or authorised by, the Department of Lands will be paid in accordance with a Schedule of Fees approved from time to time by the Minister for Lands.

(IX) "THE SURVEY CO-ORDINATION ACT OF 1952" AND "THE SURVEY CO-ORDINATION REGULATIONS, 1955"

203. Surveyors must acquaint themselves with the requirements of "*The Survey Co-ordination Act of 1952*" and the Survey Co-ordination Regulations, 1955, especially where work is being carried out on behalf of a Local Authority or other public authority, and particularly with those sections which apply to the establishment of and connections to permanent survey marks.

204. Where a survey is wholly or partly within or contiguous to any "proclaimed survey area" under section 12 of the Act, such survey "shall be connected to at least two placed, adopted or established permanent marks or to at least two placed or established survey marks which are acceptable to the Surveyor-General as standard survey marks for that proclaimed survey area."

205. To avoid confusion between the marking of cadastral and engineering surveys, Clause 27 of the Survey Co-ordination Regulations provides—

- (1) All level and engineering pegs, which consist of wood, shall be oblong in section and shall be so constructed that the dimensions of one side thereof shall not be less than one and one-half times the dimensions of the other side thereof.
- (2) Square pegs shall be used only by registered surveyors for the purpose of marking the boundaries of properties.

206. The records of the Central Plan Office, established under the Survey Co-ordination Act, should be searched for any record of surveys, which have been marked but which have not been lodged at the Survey Office, Titles Office or Mines Department and for information regarding any permanent survey marks installed in connection with any surveys recorded there; all surveys effected under these "Rules and Directions" shall connect to any such permanent survey marks adjacent thereto.

207. Where any levels have been effected in connection with any survey, the datum of such levels should be clearly stated, giving the type and number of the bench mark and the reduced level adopted therefor. It is not sufficient merely to state "on State Datum" or "on Council Datum" or the like. As more precise values may become available from time to time of the bench mark used as datum, these terms would not allow the subsequent correction of any levels connected thereto.

208. Section 17 (1) of the Survey Co-ordination Act, provides—"Any surveyor who discovers any apparent irregularity in the position of any permanent mark or that any permanent mark has been destroyed or removed, or is in disrepair, or that any measurements made by him differ from those shown upon any recorded plan, shall furnish a report thereon, in writing, to the Surveyor-General."

209. As section 5 (1) of the Survey Co-ordination Act requires all Public Authorities to appoint a Liaison Officer, he is the person whom surveyors should contact when working within the sphere of operations of such Authority.

The standard forms illustrated in Appendices I, II, IIA, and III may be handwritten or typed.



## Appendix I

BUNDABERG

30th October 19 55

REFERENCE No. 55. 2345 P. L. SIR,

Portions 54 and 61

Parish of Tottenham

Herewith are forwarded (a) One Plan<sup>s</sup>

(b) One Field Book<sup>s</sup> and (c) Accounts, in triplicate, ~~in duplicate~~, of Survey noted in the margin; and I hereby, on honour, declare that I have personally surveyed and marked out on the ground boundaries of the above-mentioned portions, and that the Plans and Field Books are correct, and the whole service performed with care and in strict accordance with the Regulations and practice of the Department. I further declare that, according to my estimate of the character of the country, I am entitled to the allowance of the extra percentage noted against each line in the Voucher Schedule.

Yours faithfully,

*Thomas Brown*  
Authorised Surveyor.

TO THE SURVEYOR-GENERAL, BRISBANE.

Remarks or Report on above Surveys

54. This portion has not been surveyed in strict accordance with the application, which included the road now forming the western boundary and part of the Camping Reserve.

Selector's consent to reduced area herewith.

61. With the exception of the road on the East boundary, this portion has been surveyed in accordance with instructions.

The road along the north of 60 to 63 is rather heavy in wet weather and will require forming at some future date.

A road of access to the Quarry Reserve has therefore been left between 61 and 62.

(a) Here state number of Plans.

(b) Here state number of Field Books.

(c) Accounts over £30 in triplicate, under that amount in duplicate.

MEMO. FOR SURVEYOR.—Unless Plans are sent to the Surveyor-General in a complete state, accompanied by this Form, Field Books, Instructions, and Vouchers (except where the latter are transmitted through the Bank), payment for Surveys will be delayed. Each Plan should also be noted with the date and by whom the Instruction was issued.



Special Attention is directed to Footnote and to the necessity to forward Journals promptly at the end of each month.

WORK PERFORMED.				WORK IN HAND.				
Date.	Reference Number.	Portion Number.	Parish or Locality.	Date.	Reference Number.	Portion Number.	Parish or Locality.	Proposed order of Work.
10.10.55	55/ 1856C	Road in Pors 231, 22V & 55	Kolan	15.5.55	55/ 176PL	Allots of Sec. No. 6, 7 & 8	Town of Coora	A
				10.6.55	55/ 1135PL	65	Langmorn	B
				9.7.55	55/ 268PL	Road in 163 164 etc.	Littabella	BC
				30.6.55	55/ 563PL	Road in 5, 9 & 31	Kolonga	D
				31.5.55	55/ 183PL	Road in 33, 87, 88 etc.	Binjour	DE

PLANS FORWARDED TO HEAD OFFICE DURING MONTH.				CANCELLED, TRANSFERRED, OR RETURNED.			
Date.	Register Number.	Portion Number.	Parish or Locality.	Date.	Register Number.	Portion Number.	Parish or Locality.
22.10.55	55/ 234PL	54 & 61	Tottenham	10.6.55	55/ 1420 LC	96	Euleilah (Withdrawn by wire from Surveyor-General.)

\* NOTE.—The order in which it is proposed to carry out the work during the next month must be indicated alphabetically. When private work interferes with work for the Department, the matter should be reported and particulars supplied.

(Date) 3rd November 1955  
 (Place) Dundaberg

Thomas Brown  
 Authorised Surveyor.

# Appendix IIA

PROGRESS JOURNAL for month of       JULY       19 63

MR. STAFF..... SURVEYOR .....SMITH.....	PLACE <u>INNISFAIL</u>
---	---------------------------

INSTRUCTIONS COMPLETED			Fd. Bk. Etc Fw'd'd to H.O.	INSTRUCTIONS IN HAND		
REGISTER No.	DATE	SUBJECT	DATE	REGIS- TER No.	DATE	SUBJECT
62/4267 SG.	14.11.62	Pors 121 - 123 Trinity	27.7.63	62/ 4958 LSB	23.3.63	Pors 114 - 118 Trinity (Pt. of Por. 103)
L. O. 2 Cairns		(Orig. Por. 51)		63/ 582PL	24.2.63	Pors 128 and 192 Psh of Sophia. Inspection and design.
				63/ 389PL	24.3.63	Por 23 Psh of Johnstone.
				L. O. 1 Innis.		
				62/ 2715 PL.	23.1.63	Allots Sec 46. Town of Tully
				A. S. 7 Innis.		
				63/ 43PL.	23.1.63	Allots Town of Kurrimine
				L.D. 40 Innis.		
				61/ 2848 PL.	28.8.61	Allots of Sec. 9 Town of Lucinda - Parish of Cordelia.
				Res. 93 - 81		

<b>WORK PROPOSED FOR NEXT MONTH</b> Survey of Pors 114 - 118 Trinity, & 128 & 192 Sophia (surround) as expedient	Estimated time in weeks to complete work in hand <u>      12      </u>
--	---

SUNDRY DUTIES			GENERAL REPORT
Number of Days in The Field	No.	REMARKS	
	16½		Humid conditions prevailed throughout the month making it unpleasant for field work; even when rain was not falling, there were times when the country was waterlogged and slippery.  One man, after sickening for a few days, is now in hospital with Scrub Typhus.  Better working conditions are awaited in the near future, when drier weather can be expected.
. . . . Office	3		
. . . . Wet Weather	2½		
. . . . Diagrams Prepared	-		
. . . . Reports Transmitted	1		
. . . . Men Employed	1		
. . . . Cadets	2		
. . . . Days Ordinary Leave	-		
. . . . Sick Leave	4		

**RAILWAY REQUISITIONS:-**  
      NIL      

SIGNATURE       J. M. Smith       DATE 1<sup>st</sup> August 1963

POSTAL ADDRESS FOR FOLLOWING MONTH:-

P. O. Innisfail

## DIARY FOR JULY 1953

Note: It should be clearly shown to what Portion, Road or Subdivisional Survey Chainages and Office Work apply.  
Camp hands are to be usefully employed when the surveyor is engaged on office work.

DATE	HOW OCCUPIED	Car Mileage	CHAINS	
			Theodolite	Compass
1 M	On rough steep boundary (prev. inaccessible) of Portion 103, wet, steep slippery and dangerous.	4	13	
2 T	On rough steep boundary of Portion 103 - wet-all in dense tropical jungle.	4	20	
3 W	Heavy rain all day - no field work possible. Men on car maintenance.			
4 T	Heavy rain early but went out late - on easier country	4	33	
5 F	Heavy rain no field work possible. Heavy flooding in coastal rivers and streams. Self in town - stores.			
6	Sat.			
7	Sun.			
8 M	Completed E Boundary of Portion 103 to Rylands Road Commenced opening out North Boundary of Portion 128 Sophia Commenced strip lines in Portion 128 - heavy lantana-in places.	7	11	86
9 T	Continued strips and inspections Portion 128 & 192 Sophia	6		138
10 W	Continued strips and inspections Portion 128 & 192 Sophia.	9		115
11 T	Continued strips and inspections Portion 128 & 192 Sophia.	10		113
12 F	Continued strips and inspections Portion 128 & 192 Sophia. Heavy lantana in places.	10		37
13	Sat.			
14	Sun.			
15 M	Marked up Roberta block etc. subs 1 - 2 (Portion 51, Pors 121 - 123) - inspecting with L/C Muir	4		
16 T	Commenced strips west of Sandy Ck. (Pors 128 & 192) and inspections.	9		121
17 W	Continued strips west of Sandy Ck. Heavy lantana.	9		55
18 T	Self plotting (M. Jones sick with flu) Pupils traversing Sandy Creek.	10		42
19 F	Show holiday.			
20	Sat.			
21	Sun.			
22 M	Inspecting and chaining and opening out strip lines	10		106
23 T	Completed inspections and strip lines available country 128 & 192 opened out east boundary Portion 123 for a start.	10		80
24 W	Commenced surround of Portion 128 for subsequent subdivision.	11	93	
25 T	Continued surround of Portion 128, and hunting for original marks.	12	51	
26 F	Self completed Portion 121 - 123 Party on Creek and opening strips.	10		43
27	Sat.			
28	Sun.			
29 M	Self office Portion 128 etc., slightly indisposed. (M. Jones sick) Men on maintenance work - tools, tents and car etc.			
30 T	Threatening rain - Commenced laying in corners for subdivision of Portion 103. M. Jones - sick	4		
31 W	Hunting for marks and traversing W. Boundary and adjacent of Portion 239 - showery. M. Jones sick.	5	19	
TOTALS		148	240	936

# Appendix III

## FORM OF COMPUTATION OF TRUE MERIDIAN FROM ASTRONOMICAL OBSERVATION

OBSERVED BY MR. AUTH. SURVEYOR THOMAS BROWN  
 AT STATION NO. 63a PORTION NO. 17V PARISH Tiari COUNTY March  
 DATE 26. 10. 19 60 LATITUDE 25°46'15" LONGITUDE 10 Hrs. East  
 INSTRUMENT C. T. S. 20" Vernier VALUE OF 1 DIVISION OF ALIDADE BUBBLE 20"  
 OBSERVED OBJECT Sun PLAN No. \_\_\_\_\_  
 REFERRING OBJECT Picket on Line EXD. \_\_\_\_\_  
 BEARING OF R.O. REFERRED TO DATUM OF SURVEY 150 20 00 DATE \_\_\_\_\_

APPARENT POSITION OF SUN	THERMOMETER 82°F						BAROMETER 29.4 In.						ZENITH DISTANCE			
	R.O.		STANDARD TIME		SUN		ALTITUDE		BUBBLE							
	o	e	H	M	S	o	'	"	o	'	"	O	E	o	'	
d	150	19 50	4	02	50	258	54	40	26	04	40	5	2	63	55	20
	330	18 40				78	54	40	26	03	00			63	57	
p	330	19 40	4	04	00	79	03	20				4	4	64	53	20
	150	20 10				259	01	40						64	51	20
SUM		78 20		6	50			234 20				9	6	257	37	00
MEAN	150	19 35	4	03	25	258	58	35						64	24	15
ASTRONOMICAL TIME			16	03	25	150	19	35	LEVEL CORRECTION			-		15		
ANGLE BETWEEN SUNS CENTRE AND R.O.						108	39	00	OBSERVED ZENITH DISTANCE			64		24	00	
d	150	19 50	4	05	45	258	31	50	25	16	40	4	4	64	43	20
	330	18 40				78	32	20	25	16	00			64	44	00
p	330	19 40	4	07	50	78	38	50				5	3	65	44	40
	150	20 10				258	38	20						65	42	50
SUM		78 20		13	35			141 20				9	7	260	54	50
MEAN	150	19 35	4	06	48	258	35	20						65	13	43
ASTRONOMICAL TIME			16	06	48	150	19	35	LEVEL CORRECTION			-		10		
ANGLE BETWEEN SUNS CENTRE AND R.O.						108	15	45	OBSERVED ZENITH DISTANCE			65		13	33	
d	150	19 50	4	10	00	258	05	40	24	19	20	3	4	65	40	40
	330	18 40				78	04	50	24	18	00			65	42	00
p	330	19 40	4	11	35	78	15	20				5	3	66	36	00
	150	20 10				258	14	10						66	34	30
SUM		78 20		21	35			40 00				8	7	264	33	10
MEAN	150	19 35	4	10	48	258	10	00						66	08	18
ASTRONOMICAL TIME			16	10	48	150	19	35	LEVEL CORRECTION			-		5		
ANGLE BETWEEN SUNS CENTRE AND R.O.						107	50	25	OBSERVED ZENITH DISTANCE			66		08	13	

**CORRECTION FOR ALIDADE BUBBLE ERROR**

Level Correction to be applied to the Zenith Distance -  $\frac{(o + e)d}{n}$

where:

o - sum of O readings. e - sum of E readings. d - 1 division of the bubble

n - number of O readings + number of E readings and (o + e) = algebraic sum of readings

REMARKS (State how Lat. and Long. were obtained) By Scale From Parish Litho.

26. 10. 19 60

Thos Brown SURVEYOR

$$\sin \frac{Z}{2} = \sqrt{\frac{\sin(S-Z) \sin(S-C)}{\sin Z \sin C}}$$

$$\sin \frac{P}{2} = \sqrt{\frac{\sin(S-P) \sin(S-C)}{\sin C \sin P}}$$

TO COMPUTE VARIATION

	1			2			3		
Observed Zenith Distance	64	24	00	65	13	33	66	08	13
Refraction +		1	48		1	53		1	59
Parallax -			8			8			8
True Zenith Distance	64	25	40	65	15	18	66	10	04
Astronomical Time	26 <sup>d</sup>	16 <sup>h</sup>	03 <sup>m</sup>	26 <sup>d</sup>	16 <sup>h</sup>	07 <sup>m</sup>	26 <sup>d</sup>	16 <sup>h</sup>	11 <sup>m</sup>
Subtract Standard Time Difference		10			10			10	
Universal Time of Observation	26	06	03	26	06	07	26	06	11
Sun's Declination at 26 Days 6 Hrs. U.T.	12	27	12	12	27	12	12	27	12
Hourly change in Dec. = 51" Correction =			03			06			09
Sun's Declination at Instant of Observation	12	27	15	12	27	18	12	27	21
Add To or Subtract From + N-S	90			90			90		
South Polar Distance	77	32	45	77	32	42	77	32	39
Zenith Distance - Z -	64	25	40	65	15	18	66	10	04
Co Latitude - C -	64	13	45	64	13	45	64	13	45
South Polar Distance - P -	77	32	45	77	32	42	77	32	39
$\frac{1}{2}(Z+C+P)$ - S -	206	12	10	207	01	45	207	56	28
S-Z -	103	06	05	103	30	53	103	56	14
S-C -	38	40	25	38	15	35	37	48	10
Check (S-Z)+(S-C)-P -	38	52	20	39	17	08	39	44	29
Log Sin Z -	9	9	5	9	9	5	9	9	5
Log Sin C -	9	9	5	9	9	5	9	9	5
Sum - Log (Sin Z + Sin C) -	19	9	0	19	9	0	19	9	0
Subtract From	20			20			20		
Log (Sin Z Sin C)	0	0	9	0	0	8	0	0	8
Log Sin (S-Z)	9	7	9	9	7	9	9	7	9
Log Sin (S-C)	9	7	9	9	7	9	9	7	9
Sum and Divide by	2	19	6	2	19	6	2	19	6
Log Sin $\frac{Z}{2}$	9	8	4	9	8	4	9	8	4
Azimuth Angle Z	44	00	46	43	49	12	43	36	29
Add To For P.M. Subtract From For A.M.	180			180			180		
True Bearing of Sun's Centre	268	01	32	267	38	24	267	12	58
Angle Between Sun's Centre and R.O.	108	39	00	108	15	45	107	50	25
True Bearing of R.O. (by observation)	159	22	32	159	22	39	159	22	33
Bearing of R.O. (by field book)	150	20	00	150	20	00	150	20	00
Observed Variation	9	02	32	9	02	39	9	02	33
Mean Observed Variation	9	02	35						

CONVERGENCE OF MERIDIANS FOR 1 MILE EAST OR WEST

LAT	CONV. (SECS)	LAT	CONV. (SECS)
10	9-18	21	19-98
11	10-12	22	21-03
12	11-06	23	22-09
13	12-02	24	23-17
14	12-98	25	24-27
15	13-94	26	25-38
16	14-92	27	26-52
17	15-91	28	27-67
18	16-91	29	28-85
19	17-92	30	30-05
20	18-94		

CONVERGENCE OF MERIDIANS

Convergence (Secs) = Diff Long (Secs) x Sin Mean Lat		°	'	"
Variation at Initial Station No	X	9	03	05
Convergence for 1.06 Miles Departure	E			27
Computed Variation at Station No	63a	9	02	38
Mean True Bearing of R.O. (by observation)		159	22	35
Difference (Bearing of R.O. Referred to Initial Merid.)		150	19	57
Bearing of R.O. by Field Book		150	20	00
Difference to be [Subtracted] for C.A.M.				03

## Appendix IV

41

### STELLAR OBSERVATIONS

Formulae for calculating the position of a star at elongation:—

Cosine hour angle = cot. dec. x tan. lat.

Sin. altitude = cosec. dec. x sin. lat.

Sin. azimuth = cos. dec. x sec. lat.

Having computed the time, azimuth and altitude, the star may be located and observed at Elongation but a more reliable result will be obtained by dealing with the star near Elongation as an extra meridian observation for azimuth, and the solar form may be used.

## Appendix No. V

### GRADIENT TABLE

Gradient	Angle	Vert. Rise per Chain	Gradient	Angle	Vert. Rise per Chain
One in—	°   '   "	Feet	One in—	°   '   "	Feet
3 ..	18 26 6	22-00	34 ..	1 41 5	1-94
4 ..	14 2 10	16-50	35 ..	1 38 12	1-88
5 ..	11 18 36	13-20	36 ..	1 35 28	1-83
6 ..	9 27 44	11-00	37 ..	1 32 53	1-78
7 ..	8 7 48	9-43	38 ..	1 30 27	1-74
8 ..	7 7 30	8-25	39 ..	1 28 8	1-69
9 ..	6 20 25	7-33	40 ..	1 25 56	1-65
10 ..	5 42 38	6-60	41 ..	1 23 50	1-61
11 ..	5 11 40	6-00	42 ..	1 21 50	1-57
12 ..	4 45 49	5-50	43 ..	1 19 56	1-53
13 ..	4 23 55	5-08	44 ..	1 18 7	1-50
<b>14 ..</b>	<b>4 5 8</b>	<b>4-71</b>	45 ..	1 16 23	1-47
15 ..	3 48 51	4-40	46 ..	1 14 43	1-44
16 ..	3 34 35	4-12	47 ..	1 13 8	1-40
17 ..	3 21 59	3-88	48 ..	1 11 37	1-37
18 ..	3 10 47	3-67	49 ..	1 10 9	1-35
19 ..	3 0 46	3-47	50 ..	1 8 45	1-32
20 ..	2 51 45	3-30	55 ..	1 2 30	1-20
21 ..	2 43 35	3-14	60 ..	0 57 17	1-10
22 ..	2 36 9	3-00	65 ..	0 52 53	1-02
23 ..	2 29 22	2-87	70 ..	0 49 6	0-94
24 ..	2 23 9	2-75	75 ..	0 45 50	0-88
25 ..	2 17 26	2-64	80 ..	0 42 58	0-82
26 ..	2 12 9	2-54	85 ..	0 40 27	0-78
27 ..	2 7 16	2-44	90 ..	0 38 12	0-73
28 ..	2 2 43	2-36	95 ..	0 36 11	0-69
29 ..	1 58 30	2-28	100 ..	0 34 23	0-66
<b>30 ..</b>	<b>1 54 33</b>	<b>2-20</b>	110 ..	0 31 15	0-60
31 ..	1 50 51	2-13	120 ..	0 28 39	0-55
32 ..	1 47 24	2-06	<b>125 ..</b>	<b>0 27 30</b>	<b>0-53</b>
33 ..	1 44 9	2-00	130 ..	0 26 27	0-51
			140 ..	0 24 33	0-47
			150 ..	0 22 55	0-44





# Appendix VII

TABLE OF TEMPERATURE CORRECTIONS, IN FRACTIONS OF A LINK, FOR EACH DEGREE FAH., FROM 1° TO 100°, AND FROM 1 TO 10 CHAINS.

Fah.	Fah.										Fah.								
	1	2	3	4	5	6	7	8	9	10									
1	.001	.001	.002	.002	.003	.004	.004	.005	.006	.006	.007	.007	.008	.008	.009	.009	.010	.010	.010
2	.001	.002	.003	.003	.004	.005	.005	.006	.007	.007	.008	.008	.009	.009	.010	.010	.011	.011	.011
3	.002	.003	.004	.004	.005	.006	.006	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.012
4	.002	.003	.004	.005	.005	.006	.006	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.012
5	.003	.004	.005	.005	.006	.007	.007	.008	.009	.009	.010	.010	.011	.011	.012	.012	.013	.013	.013
6	.004	.004	.005	.006	.006	.007	.007	.008	.009	.009	.010	.010	.011	.011	.012	.012	.013	.013	.013
7	.004	.005	.005	.006	.007	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.013	.013	.013
8	.005	.005	.006	.006	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.013	.013	.013	.013
9	.005	.006	.006	.007	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.013	.013	.013	.013
10	.006	.006	.007	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.013	.013	.013	.013	.013
11	.007	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.012	.013	.013	.013	.013	.013	.013
12	.007	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.012	.013	.013	.013	.013	.013	.013	.013
13	.008	.008	.009	.009	.010	.010	.011	.011	.012	.012	.012	.013	.013	.013	.013	.013	.013	.013	.013
14	.008	.009	.009	.010	.010	.011	.011	.012	.012	.012	.013	.013	.013	.013	.013	.013	.013	.013	.013
15	.009	.009	.010	.010	.011	.011	.012	.012	.012	.013	.013	.013	.013	.013	.013	.013	.013	.013	.013
16	.010	.010	.011	.011	.012	.012	.012	.013	.013	.013	.013	.013	.013	.013	.013	.013	.013	.013	.013
17	.011	.011	.012	.012	.013	.013	.013	.014	.014	.014	.014	.014	.014	.014	.014	.014	.014	.014	.014
18	.011	.012	.012	.013	.013	.014	.014	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015
19	.012	.012	.013	.013	.014	.014	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015	.015
20	.012	.013	.013	.014	.014	.015	.015	.016	.016	.016	.016	.016	.016	.016	.016	.016	.016	.016	.016
21	.013	.013	.014	.014	.015	.015	.016	.016	.016	.016	.016	.016	.016	.016	.016	.016	.016	.016	.016
22	.014	.014	.015	.015	.016	.016	.016	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017
23	.014	.015	.015	.016	.016	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017	.017
24	.015	.015	.016	.016	.017	.017	.017	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018
25	.015	.016	.016	.017	.017	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018	.018
26	.016	.016	.017	.017	.018	.018	.018	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019
27	.017	.017	.018	.018	.018	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019	.019
28	.017	.018	.018	.019	.019	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020
29	.018	.018	.019	.019	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020	.020
30	.019	.019	.020	.020	.020	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021
31	.019	.020	.020	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021	.021
32	.020	.020	.021	.021	.021	.022	.022	.022	.022	.022	.022	.022	.022	.022	.022	.022	.022	.022	.022
33	.021	.021	.022	.022	.022	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023
34	.021	.022	.022	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023	.023
35	.022	.022	.023	.023	.024	.024	.024	.024	.024	.024	.024	.024	.024	.024	.024	.024	.024	.024	.024

Coefficient of expansion for steel = .0000065.

### Appendix No. VIII

#### TABLE OF THE COUNTIES OF QUEENSLAND

Showing the COUNTY VARIATION and the Location (with Latitude and Longitude) of the INITIAL POINT for each.

Trigonometrical Station shown \*

Astronomical Station shown †

Latitude Station shown ‡

Revised to 1st August, 1963.

NOTE:—DATUM FOR LONGITUDE: NO. 1. BENCH MARK, SURVEY OFFICE, BRISBANE—LONGITUDE 153° 01' 29".6 E.

County	Initial Point	Latitude S.	Longitude E.	County Variation
		° ' "	° ' "	
Abbotford	Station S (G. 250.199) on Rabbit fence, at north-west corner Ben Castle Block	26 39 53.0	141 23 56.4	5
Aberdeen	North corner portion 2, parish of Goongahilly	25 56 37.9	149 18 58.3	7
Albany	South-east corner View Hill Block, at tree marked broad-arrow over A over V	21 43 32	146 16 11	6
Albion	North-west corner portion 8, parish of Owl's Nest	21 23 42.6	142 46 07.6	5
Allison	North-west corner portion 5, parish of Collins	21 31 14.4	141 03 40.4	4
Amaroo	50-mile peg (Bedford's Survey, Trig. S. 9)	23 05 12.8	139 08 48.7	4
Archer	Tree marked broad-arrow over MD6 over B5, at north-west corner Meta Downs No. 6 Block	13 25 28	142 31 12	5
Argylla	Intersection peg at 161532 feet on the old Cloncurry-Mount Isa Road	20 41 12.7	139 53 36.2	4
Auburn	Bloodwood Hill *	27 22 48.10	151 34 35.71	8
Ayrshire	North corner Police Reserve (R. 57), town of Chinchilla	26 44 28.7	150 37 29.5	8
	Winton †	22 23 11.94	143 02 25.49	5
Balarga	North-east corner Koolah No. 8 Block	15 10 20	142 42 09	5
Bando	North-west corner section 4, town of Coongoola	27 39 10.8	145 54 03.4	6
Banks	Crossing of closed Cooktown-Laura Railway over Normanby River	15 23 27.6	144 52 29.3	6
Barcoo	South corner portion 3, parish of Albilbah	24 27 08.7	144 14 20.2	6
Bauhima	Station 5 (Bh. 25) on east boundary portion 3, parish of Spottiswood	24 43 16.0	149 28 01.4	7
Beaconsfield	Cloncurry †	20 42 23.3	140 30 17.8	4
Beaufort	Hobartville Head Station	23 18 17	146 30 27	4
Bell	Twin Hills †	21 57 40.10	146 56 29.54	6
Belmore	St. George †	28 01 44.5	148 35 22.8	7



TABLE OF COUNTIES, WITH THE COUNTY VARIATION AND INITIAL POINT FOR EACH—continued

County	Initial Point	Latitude S.		Longitude E.		County Variation
		°	'	°	'	
Chelmsford	South corner section VII, town of Maytown	16	03	144	17	0
Chesterton	North-east corner portion 1, parish of Attica	25	12	147	28	5
Cheviot	North corner section IV, town of Welford	25	02	143	39	7
Chudleigh	North-west corner portion 1, parish of Stawell	19	54	143	54	5
Churehill	Mount Zahel*	27	48	152	19	9
Clarke	Crossing of telegraph line over Gray Creek	18	57	145	03	6
Claude	Tree marked broad-arrow over C at junction Claude River and Goodlife Creek	24	31	147	05	6
Clermont	Clermont †	22	49	147	38	7
Clinton	Gladstone †	23	50	151	15	8
Clive	Texas Mountain*	28	51	151	12	8
Coen	South-east corner Strathearn No. 1 Block, at tree marked broad-arrow over S 1 over R 1	14	06	142	39	5
Cogoon	South-west corner portion 1, parish of Ballaroo	27	21	148	27	7
Conbar	Tree marked broad-arrow over W over 2, at north-east corner Ness Block	27	08	143	24	6
Consuelo	West corner portion 1, parish of Warrinilla	24	50	148	32	7
Cook	Bundaberg †	24	52	152	20	8
Cooper	Tree marked broad-arrow over C over 171, on Maapoo Waterhole (Cooper's Creek)	27	35	141	15	5
Coorajah	East corner portion 2, parish of Coorajah	25	12	144	15	6
Cootah	West corner Drumduff Holding	15	57	142	37	5
Copperfield	Carpentaria Downs Head Station	18	43	144	19	5
Coreena	North-west corner portion 10v, parish of Busthinia, county of Evora	23	26	145	37	6
Cumberland	South-west corner R. 60, parish of Brompton	22	35	143	59	5
Curralle	Mount Howitt Head Station	26	30	142	15	5
Currawilla	Currawilla Head Station, at tree marked broad-arrow over F over XV	25	08	141	20	5
Dagmar	South-west corner R. 4, parish of Thornborough	16	56	145	00	6
Dalrymple	South-west corner portion 3v, parish of Southwick	19	48	145	43	6
Daroo	South-west corner section IV, town of Betoota	25	04	140	44	4
Davenport	Chartiers Towers †	20	04	146	15	6
Dawson	Station 6 (Dw. 50) on north boundary portion 16, parish of Woolton	24	55	150	16	8
Deas Thompson	East corner portion 39v, parish of Langmorn	23	43	150	54	8
Denison	South-west corner section VII (School Reserve), town of Springsure	24	07	148	05	7

Derby	South-east corner portion 31, parish of Weranga	27	19	27.3	150	52	23.5	8
Diamantina	Davenport Downs Head Station	24	08	10	141	06	45	5
Dickson	East corner portion 3v, parish of Martyr	22	04	19.5	147	40	30.1	7
Douglas	Hughenden †	20	50	41.43	144	11	52.64	5
Drake	South-east corner portion 2, parish of Havilah	20	51	53.9	147	46	28.8	7
Drummond	Drummond Crossing over Alpha Creek at 199635 feet on Alpha-Tambo Road	24	08	36.0	146	37	15.4	6
Drury	Station 1 (Dr. 15) on south boundary portion 3, parish of Labona	22	06	09.4	146	19	35.7	6
Dublin	South corner portion 110, parish of Tyrconnel	26	27	04.1	147	32	10.7	7
Dulhunty	Moreton Telegraph Station	12	27	23	142	38	11	5
Dunbar	Tree marked broad-arrow over R over RP7, on Magnificent Creek, near Mitchell River Mission Station	15	28	44	141	44	15	4
Durham	Durham Downs Head Station	27	05	03	141	54	36	5
Durrie	Nurdah Out Station, at tree marked broad-arrow over I over XXXII	25	38	50	140	01	45	4
Dutton	North-west corner portion 4, parish of Fairlight	20	33	34.7	143	51	20.3	5
Eddington	Station 126 (En. 62) on south boundary portion 9, parish of Eddington	20	39	19.0	141	32	44.1	5
Einasleigh	Tree marked broad-arrow over L over LJ over 2, at north-east corner Fiery Block	17	57	24	143	35	12	5
Eiderslie	North corner portion 2, parish of Haliun	22	38	03.5	142	23	29.0	5
Elgin	Surat †	27	09	16.4	149	04	09.1	7
Elphinstone	Woodstock Railway Station, at 24 mile peg	19	35	52.5	146	50	12.3	6
Esmeralda	South-west corner Esmeralda Holding	18	39	55	142	16	25	5
Etheridge	North-west corner portion 19 (School Reserve), parish of Bumba	18	09	05.1	142	51	37.1	5
Eurne	Tree marked broad-arrow over A over 81, on east boundary Feu East Block	24	08	09	139	47	20	4
Evora	North-west corner portion 10v, parish of Busthinia	23	26	23.0	145	37	23.9	6
Eyre	North-west corner Glengyle Holding	24	33	30	138	26	54	4
Farrar	Connemara †	24	13	16.65	142	16	45.05	5
Ferguson	Banana †	24	28	47.0	150	07	40.8	8
Fermoy	North-west corner portion 3, parish of Deballada	23	04	10.3	142	54	18.4	5
Fielding	Tree marked broad-arrow over Z over XVIII, at north-west corner Roderick Holding	19	04	42	141	55	40	5
Fitzroy	Nanango †	26	40	22.7	152	00	22.4	8
Flinders	Miriam Vale †	24	19	44.8	151	33	42.8	8
Fortescue	Taroorn †	25	38	26.2	149	47	42.8	8
Foxton	Tree marked broad-arrow over A over 25, on Amelia C., in Amelia Creek Holding	21	06	15	145	40	36	6
Franklin	Vanrook Head Station	16	57	55	141	56	24	4
Fraser	Sandy Cape Lighthouse *	24	43	53.6	153	12	31.9	9

TABLE OF COUNTIES, WITH THE COUNTY VARIATION AND INITIAL POINT FOR EACH—continued

County	Initial Point	Latitude S.	Longitude E.	County Variation
Gayndah	North-west corner portion 1, parish of Clare	22 32 22.6	145 40 52.1	0
Georgina	South-west corner Alderley Holding	22 38 45	139 08 50	6
Gilbert	Georgetown †	18 17 31.8	143 32 43.1	4
Gladstone	South-east corner Camping Reserve (R. 34), parish of Barratta	19 48 28.5	147 07 56.7	5
Glanworth	North-west corner portion 1, parish of Behool	25 14 24.7	145 44 38.4	6
Glengyle	Tree marked broad-arrow over G over D7, at corner rabbit fence, at north-west corner Doyal Block	24 55 25	139 08 18	4
Glenora	Tree marked broad-arrow over C over G on Yappa River, at north-east corner Cowabunya Block	19 02 03	142 50 52	5
Gordon	Eromanga †	26 40 06.37	143 15 59.75	6
Gould	Tree marked broad-arrow over P over J, at south-east corner Highbury Holding	16 33 58	143 13 03	5
Gowan	South-west corner portion 3, parish of Listowel	25 20 05.5	145 03 04.6	6
Grenada	South-west corner portion 5, parish of Melinda	19 50 35.5	140 22 06.9	4
Gregory	Landsborough's marked tree, marked broad-arrow over RTR over N 10 over 1862, on Gregory River, in Riversleigh Holding	18 55 26	138 56 54	4
Grey	Station 34 (Ge. 13) on north boundary portion 1, parish of Whitula	25 22 14.2	142 16 49.6	5
Griffith	South corner section VII, town of Pentland	20 31 39.0	145 23 51.7	6
Grosvenor	Grosvenor Downs †	22 03 02.0	148 07 49.0	7
Gunnawarra	North-west corner portion 2, parish of Kinrara	18 20 31.1	145 03 19.7	6
Haddon	No. 1 Well, near Meeba Downs Station, in Westby Holding	25 47 35	141 27 18	5
Hamilton	Hamilton Tank	22 46 14	140 36 08	4
Hann	Musgrave Telegraph Station	14 46 57	143 30 07	5
Herbert	Bowen †	20 00 50.6	148 14 51.4	7
Hillalong	Station 28 (Hln. 16) on east boundary portion 1, parish of Tiverton	21 07 18.4	148 19 43.0	7
Hodgkinson	South-west corner R. 4, parish of Thornborough	16 56 51.0	145 00 13.3	6
Howitt	North-west corner portion 7, parish of Smithburne	17 01 57.0	141 14 38.0	4
Humboldt	North-west corner allotment 1, section VI, town of Blackwater	23 35 10.1	148 52 51.7	7
Humeburn	North-east corner portion 6, parish of Natraport	27 19 18.9	145 00 14.6	6
Iffley	Iffley Head Station	18 52 19	141 12 25	4

Jardine ..	McDonnell Telegraph Station (Disused) ..	11	38	51	142	26	54	4
Kalkah ..	Tree marked broad-arrow over Y over 13, at south-east corner Minka Holding, on Coleman River	14	54	38	142	56	22	5
Kamileroi ..	Station 61 (Ki. 4) on south boundary portion 5, parish of Beling	19	14	01-1	139	43	07-4	4
Kendall ..	North-west corner Meta Downs No. 4 Block, at tree marked broad-arrow over RES over MD4	13	41	15	141	58	00	4
Kennedy ..	Station 4 (Ke. 41) on west boundary portion 7, parish of Wallam	26	57	17-1	147	40	48-6	7
Killarney ..	Collaroy † .. .. .	22	02	12-9	149	11	08-5	7
Kimberley ..	Duaringa † .. .. .	23	42	54-6	149	40	22-2	7
King ..	West corner Strathleven No. 1 Block .. .. .	15	51	50	143	16	51	5
Koolah ..	Tree marked broad-arrow over R over 25, on Mitchell River .. .. .	15	16	54	141	52	51	6
Kungie ..	10 mile post on Border Survey (M51.99), west of Warrego River .. .. .	29	00	00-0	145	30	14-2	6
Kyabra ..	Station 21 (Kb 4) on west boundary portion 2, parish of Cooloo .. .. .	26	05	48	142	57	12	5
Kynuna ..	South corner allotment 9, section XI, town of Kynuna .. .. .	21	34	55-1	141	55	13-9	5
Kyruna ..	North-east corner portion 3v, parish of Norley .. .. .	28	03	56-9	143	17	06-5	6
Labouchere ..	Taroom † .. .. .	25	38	26-2	149	47	42-8	7
Lamington ..	Tree marked broad-arrow over C, at north-east corner Yapparton Holding .. .. .	18	24	20	141	34	55	4
Landsborough ..	South-east corner portion 2, parish of Goorala .. .. .	19	15	25-7	140	09	58-0	4
Lang ..	North-west corner portion 19 (School Reserve), parish of Bumba .. .. .	18	09	05-1	142	51	37-1	5
Langlo ..	South-west corner portion 2v, parish of Langlo .. .. .	25	41	01-7	145	38	44-5	6
Lennox ..	Kilkivan † .. .. .	26	05	09-1	152	14	34-7	8
Leura ..	North-east corner portion 1, parish of Defarge .. .. .	23	12	28-2	149	20	37-3	7
Liebig ..	Mariborough † .. .. .	22	51	28-3	149	52	43-0	8
Livingstone ..	Rockhampton † .. .. .	23	22	46-0	150	30	44-3	8
Lukin ..	Tree marked broad-arrow over RES over B3, on Edward River, at south corner Bathwick No. 3 Block .. .. .	14	40	09	142	01	40	4
Lynd ..	11 miles 40 chains on Etheridge Railway, on bridge over Tate River .. .. .	17	28	35-9	144	37	25-0	5
Lyndhurst ..	Crossing of Peninsula Developmental Road (Main Roads plan 43399) over Einasleigh River, near Lyndhurst Head Station .. .. .	19	12	13-0	144	22	13-2	5
Lytton ..	Jandowae † .. .. .	26	46	58-7	151	06	36-5	8
Mackenzie ..	Gayndah † .. .. .	25	37	37-3	151	36	41-5	8
Malwa ..	West-east corner Eton Vale No. 2 Block .. .. .	23	48	40	140	21	33	4
Maneroo ..	West corner portion 10v, parish of Evesham .. .. .	23	11	34-5	143	37	33-9	5
Manifred ..	South corner portion 3, parish of Lara .. .. .	20	12	46-6	141	37	43-2	5



TABLE OF COUNTIES, WITH THE COUNTY VARIATION AND INITIAL POINT FOR EACH—continued

County	Initial Point	Latitude S.	Longitude E.	County Variation
Manuka	North-east corner portion 1, parish of Manuka	21 36 50.1	143 19 39.5	0
Marame	North-west corner Mentana No. 23 Block, near tree marked broad-arrow over 33	16 07 24	142 26 38	5
Maranoa	West corner portion 3, parish of Dromore	27 34 16.8	148 07 16.6	5
March	Maryborough †	25 32 16.0	152 42 06.9	7
Marga	South corner Staaten River Holding, near tree marked broad-arrow over W over 21	17 05 10	142 24 50	9
Marsh	Inglewood †	28 25 06.5	151 04 23.6	5
Mayne	Dunham Towers Out Station, in Carcara Holding	23 52 38	142 18 42	5
McKinlay	Adavale †	25 54 39.48	144 35 54.59	5
Melville	Cape Bowen	14 30 33	144 39 55	6
Merlin	Mount Gammie *	28 07 03.13	151 42 24.35	5
Mexico	Selwyn Railway Station	21 31 43.2	140 30 01.6	8
Mitchell	South-west corner portion 9v, parish of Burgoyne	23 48 56.0	146 04 58.7	4
Monkira	South-west corner portion 4v, parish of Thornleigh	24 24 12.2	144 50 18.7	6
Morstone	Tree marked broad-arrow over I over XXI, on Mackhara Waterhole	24 47 52	140 37 33	4
Mosman	West corner Rocklands No. 6 Block, near tree marked broad-arrow over LXXXIII	19 23 07	138 19 39	4
Mowarra	Crossing of telegraph line over Kennedy River, at tree marked broad-arrow over B	15 25 42	144 10 55	5
Mueller	South-west corner portion 9, parish of Drylands	24 57 00.0	142 18 13.6	5
	South-east corner Adavale Block, near tree marked broad-arrow over AV over AVI over HP5	18 29 22	138 12 54	4
Munga	North-east corner portion 7v, parish of Orkadilla	26 08 50.5	147 12 26.2	7
Mungallala	South-east corner portion 1, parish of Yummerman	27 59 13.7	147 06 21.8	7
Murchison	St. Lawrence †	20 20 50.5	149 32 04.9	7
Murray	South-west corner portion 1, parish of Robey	22 23 03.3	146 56 51.4	6
Musgrave	South corner portion 1, parish of Silsoe	23 29 41.4	143 30 18.6	5
Nares	Cairns †	16 55 27.77	145 46 48.14	6
Nash	North-west corner Chad Holding, near tree marked broad-arrow over CH over GF	20 42 40	138 31 36	4
Nebine	Iron pin, near north-west corner section III, town of Tego	28 50 56.1	146 47 06.0	7
Newcastle	Hawkwood †	25 46 58.3	150 48 59.7	8
Nicholson	Tree marked broad-arrow over C, on Cliffdale Creek, at crossing of Darwin Road	17 35 50	138 26 28	4
Nickavilla	South-east corner P.P.I., parish of Gunnadorah	26 30 57.9	144 19 45.8	6
Nive	South-east corner north severance portion 2, parish of Malta	24 50 30.4	146 46 14.2	6



TABLE OF COUNTIES, WITH THE COUNTY VARIATION AND INITIAL POINT FOR EACH—continued

County	Initial Point	Latitude S.			Longitude E.			County Variation
		°	'	"	°	'	"	
Raglan ..	North-west corner portion 28, parish of Annandale	24	05	03.5	150	28	03.3	0
Rawbelle ..	Station 54 (Rw. 309) on north-east boundary R. 68, parish of Rawbelle	25	01	44.4	150	50	38.3	8
Richmond † ..	Richmond †	20	44	05.88	143	08	30.71	5
Rochedale ..	South-west corner Leadmore No. 5 Block, near tree marked broad-arrow over L5 over R12	20	45	26	139	10	15	4
Rodney ..	South-west corner portion 2v, parish of Collier	23	06	43.5	144	50	58.1	6
Rogers ..	Station 37 (Rg. 356) on west boundary portion 4, parish of Myall Grove	27	03	38.1	150	04	41.4	8
Roper ..	June Head Station	22	56	03	149	08	16	7
Rosebery ..	North corner Town Reserve, town of Birdsville	25	52	53	139	21	26	4
Rosebrook ..	South-west corner portion 6, parish of Matahna	23	08	42.6	142	15	29.1	5
Ross ..	South-east corner portion 1, parish of Onay	26	25	00.6	146	35	52.5	6
Rupert ..	Richmond †	20	44	05.88	143	08	30.71	5
Ruthven ..	North-east corner portion 2, parish of Moonda	24	12	00.0	143	50	40.6	5
Rutledge ..	Station 22 (Ru. 1) on south boundary portion 1, parish of Mendip	22	35	13.5	147	04	36.9	6
Salisbury ..	Bobawaba Railway Station, at 47 miles 6,970 links	19	49	28.1	147	34	26.7	6
Sandringham ..	Sandringham Head Station	24	04	50	139	03	34	4
Savannah ..	North-west corner Malpas Holding, near tree marked broad-arrow over Z over XVII	19	32	28	142	08	49	5
Saxby ..	Station 220 (Sx. 7) in portion 1, parish of Bowpark	20	00	16.6	141	57	08.2	5
Sellheim ..	Mount McConnel †	20	48	08.80	146	58	58.34	6
Selwyn ..	Malbon Railway Station, at 31 miles 7,234.5 links	21	04	26.7	140	17	59.3	4
Shelburne ..	Middle Peak	11	55	39	142	51	26	5
Stidmouth ..	Angle of Northern Telegraph Line, about 1 mile southerly from Stewart River	14	10	03	143	21	18	5
Solander ..	Port Douglas †	16	29	00.93	145	27	53.5	6
Somerset ..	Paterson †	10	48	11.8	142	23	44.4	4
Stanley ..	No. 1 State Bench Mark, Survey Office, Brisbane	27	28	28.6	153	01	29.6	9
Stokes ..	Tree marked broad-arrow over HP over B, at south-west corner Boongalee Block	18	15	36	140	38	04	4

Strathleven	North-east corner Strathleven Holding, at tree marked broad-arrow over TI over P3	15	54	06	143	32	14	5
Strathmore	South corner Staaten River Holding, near tree marked broad-arrow over W over 21	17	05	10	142	24	50	5
Sturt	Tree marked broad-arrow over T over 4, at west corner Table-top No. 4 Block	23	39	14	138	22	14	4
Surrey	Croydon †	18	12	13-63	142	14	51-89	5
Taiavanta	Tree marked broad-arrow over ND2 over D, at south-west corner Endymion Holding	18	23	08	140	11	00	4
Talbot	North-east corner R. 29, parish of Lilyvale	23	12	07-2	148	20	45-5	7
Taldora	Station 16a (Td. 12) on north boundary portion 2, parish of Merindee	19	14	29-3	141	21	23-7	4
Tambo	North corner portion 4, parish of Hawick	24	29	54-0	145	47	18-7	6
Tanbar	Tree marked broad-arrow over C over 70, on Cooper's Creek, at north-west corner Keerongooloo Holding	25	48	44	142	11	47	5
Tate	Mount Surprise Railway Station, Tangent point at 0.m. 7,233-4 links	18	08	47-5	144	18	58-5	5
Tewinga	Tree marked broad-arrow over ED1, on south boundary Cresfield No. 2 Block	19	45	20	139	48	20	4
Thunda	North-east corner portion 1, parish of Moothandella	25	31	33-4	143	06	00-0	5
Tingarra	Tree marked broad-arrow over A over XXI, on Arcadia Creek, in Arcadia Holding	25	14	48	148	48	30	7
Titheroo	South-west corner Saltire Block	28	39	47-7	143	21	20-0	6
Toko	Tree marked broad-arrow over L over 18, on Linda Creek, near west corner Idamea Lakes No. 11 Block	22	39	06	138	22	34	4
Tomoo	South-west corner portion 2, parish of Tongy	27	22	48-3	147	17	22-6	7
Toorak	Eulolo Head Station	21	13	30	141	32	23	5
Torres	Thursday Island †	10	35	07-48	142	13	06-51	4
Towerhill	North-west corner portion 8v, parish of Eastfield	21	58	57-5	144	44	28-7	6
Uanda	North-west corner portion 11v, parish of Midlothian	21	27	03-7	144	42	39-9	5
Ularunda	South-east corner portion 2, parish of Lomax	27	03	17-7	146	41	29-4	7
Undilla	Tree marked broad-arrow over R over XIV, on Thornton River, on north-west boundary R. 1, parish of Narah	19	21	58	138	50	51	4
Vergemont	Tree marked broad-arrow over K over XXX, on Vergemont Creek, near north boundary Vergemont No. 1 Block	23	50	12	143	08	46	5
Victor	Tree marked broad-arrow over G over XXXVI, at junction Percy and Gilbert Rivers	19	08	25	143	28	04	5

TABLE OF COUNTIES, WITH THE COUNTY VARIATION AND INITIAL POINT FOR EACH—Continued

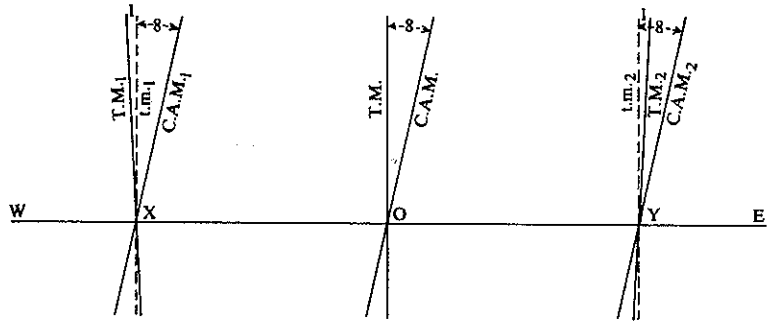
County	Initial Point	Latitude S.	Longitude E.	County Variation
Wairuna	Crossing of Ingham road over Burdekin River, near Oakhills Head Station	18 32 36	145 35 48	6
Waldegrave	Roma †	26 34 31-32	148 47 05-04	7
Walker	South-east corner portion 2, parish of Aberfoyle	21 49 47-8	145 15 07-5	6
Walsh	Tree marked broad-arrow over N over XXIX, at junction Brown Creek and Mitchell River	16 32 00	143 40 40	5
Warbreccan	North-west corner portion 16, parish of Chaunsiit	24 48 17-6	142 53 16-0	5
Warburton	Tree marked broad-arrow over C over XXIII, on south-east boundary Clarendon Holding	22 13 27	140 53 28	4
Ward	Mount Tamborine *	27 55 13-03	153 09 37-46	9
Warner	South-east corner Kalkah No. 6 Block, at tree marked broad-arrow over K6	15 15 54	143 21 46	5
Warrong	South-west corner portion 6, parish of Ogilvie	25 22 00-6	147 59 26-7	7
Waverley	East corner portion 2, parish of Moonah	21 26 48-6	139 03 58-0	4
Weipa	Tree marked broad-arrow over B over XXVI, on Wenlock River	12 14 50	142 03 16	4
Wellesley	Sweers Island (Inscription Point)	17 06 56	139 35 40	4
Wellington	Eulo †	28 09 44-95	145 02 13-44	6
Wentworth	Tree marked broad-arrow over L over 11, on Lagoon Creek, near crossing of Darwin Road	17 20 50	138 16 58	4
Weramo	South-east corner Grayshall Block	25 26 40	138 26 36	4
Weringa	Remains of Cacoory Station, near Cacoory Waterhole on Gilmour Creek	25 14 49	139 33 32	4
Westgrove	North-east corner portion 21, parish of Simmie	25 41 31-2	148 40 56-7	7
Weymouth	Tree marked broad-arrow over BR over 1, at north-east corner Big River No. 1 Block, on Wenlock River	13 07 50	143 10 30	5
Wicklow	Hawkwood †	25 46 58-3	150 48 59-7	8
Wilkie Gray	North-east corner portion 304, parish of Argentine	19 20 08	146 10 55	6
Wills	Boulia †	22 54 45-43	139 54 24-44	4
Wilson	Station 29 (G. 250,238) on rabbit fence, near tree marked broad-arrow over T over 24, on Dingera Creek, near south-east corner O'Hea Block	22 08 08-2	141 52 43-9	5
Windever	West corner portion 6, parish of Cathy	24 39 21-5	146 22 55-5	6
Windsor	Noranside Station, at well	22 09 46	140 05 55	4
Windula	North-west corner portion 3, parish of Bellalie	26 58 55-7	142 46 44-0	5
Wodehouse	Nebo †	21 41 24-0	148 41 30-7	7
Wokingham	South-east corner R. 1, parish of Nukun	21 56 43-2	142 27 54-7	5
Wolseley	South-east corner portion 17, parish of Bimera	24 25 09-7	143 28 28-3	5

Wondoola	Donors Hill Head Station	18	42	40	140	33	20	4
Wongalee	Intersection north boundary portion 1, parish of Galah, and Prairie Creek	20	16	31-2	144	33	04-5	5
Wonomo	South-east corner Boonal Block, near tree marked broad-arrow over E over CXXI	20	08	15	138	21	54	4
Woodstock	North corner portion 10v, parish of Eyerah	22	18	33-5	141	41	37-4	5
Woolgar	North-east corner Blacktown Block, near tree marked broad-arrow over B over 11	19	45	14	143	00	28	5
Wooroolah	East corner portion 1v, parish of Berriedale	24	59	18-8	145	21	19-2	6
Wooroona	Tree marked broad-arrow over S over H, at Shotover Head Station	24	03	42	149	05	50	7
Woura	Iron pin, near north-east corner section 1, town of Prairie	20	52	22-3	144	35	58-1	5
Wrotham	Tree marked broad-arrow over G over MD, at north-east corner Wrotham Park Holding	16	29	16	144	08	40	5
Wyara	North-east corner Zenoni Block, at post marked broad-arrow over S	28	29	16	143	51	10	6
Yagoonya	Tree marked broad-arrow over 37, near junction Wyaaba Creek and Staaten River	16	26	52	141	34	18	4
Yappar	South-west corner portion 11, parish of Burleigh	20	18	00-3	142	47	21-0	5
Yarrol	Station 10 (Yl. 453) on north boundary portion 1, parish of Daigangal	25	06	23-4	151	19	48-7	8
York	Merluna Head Station	13	03	52-2	142	26	36-9	5
Youranigh	North-east corner portion 1v, parish of Montes	23	54	09-4	145	01	31-2	6

### Appendix IX

#### THE APPLICATION OF CONVERGENCE

The following diagram and explanation show how the necessary allowances for convergence are to be made and illustrate the use of the Tables given in Appendices viii and x.



Let O be the "Initial Point" of a County.

W. E.—Part of a great circle run out west and east from O.

T. M.—Part of the "Initial True Meridian" passing through O.

C. A. M.—Part of the initial "County Arbitrary Meridian" passing through O at an angular divergence of 8° E. (the "County Variation") from T. M.

C. A. M.<sub>1</sub>, C. A. M.<sub>2</sub>—Parallel to C. A. M.—Represent the "County Arbitrary Meridian" through the points X and Y respectively—the distances OX, OY, being each equal to 1' of convergence.

T. M.<sub>1</sub>, T. M.<sub>2</sub> are true meridians passing through points X and Y, having a convergence of 1' each towards T. M.

*tm*<sub>1</sub>, *tm*<sub>2</sub> are lines passing through X and Y, but parallel to the "Initial True Meridian"—T. M. through O.

In accordance with Clause 39, therefore, the true bearing of a survey line having been determined, the allowance for convergence (obtained from Appendix x), must be deducted for a station west, and added for a station east of the "True Initial Meridian"; in order to refer the line to the "True Initial Meridian," which is represented at the station by the line *tm*<sub>1</sub> or *tm*<sub>2</sub>. From this, again, must be deducted the adopted "County Variation" (Appendix viii), and the result will be the bearing of the survey line referred to the "County Arbitrary Meridian."

*Example.*—At a point 5.6 miles west of the "True Initial Meridian" of the County of Langlo, and in Lat. 25° 50' S., the bearing of a line referred to the true meridian is found to be 46° 36' 25". What is its bearing referred to the "County Arbitrary Meridian"?

True bearing by observation	.. .. .	46	36	25
Convergence by Appendix x (25"·2 × 5.6)—				
deduct*	.. .. .		2	21
<hr/>				
Bearing referred to True Initial Meridian	.. .. .	46	34	4
Adopted County Variation (Appendix viii)—deduct †		6	0	0
<hr/>				
Bearing referred to County Arbitrary Meridian	.. .. .	40	34	4

\* The station being west.—At a station east of the True Initial Meridian, the allowance for convergence must be added.

† Always a minus quantity.

# Appendix No. X

Latitude	Convergence in Seconds—per Statute Mile						Latitude
°	0'	10'	20'	30'	40'	50	°
10	9.18	9.34	9.49	9.65	9.80	9.96	10
11	10.12	10.28	10.43	10.59	10.75	10.91	11
12	11.06	11.22	11.38	11.54	11.70	11.86	12
13	12.02	12.18	12.34	12.50	12.66	12.82	13
14	12.98	13.14	13.30	13.46	13.62	13.79	14
15	13.95	14.11	14.27	14.44	14.60	14.76	15
16	14.93	15.09	15.25	15.42	15.58	15.75	16
17	15.91	16.08	16.25	16.41	16.58	16.75	17
18	16.91	17.08	17.25	17.42	17.59	17.75	18
19	17.92	18.09	18.26	18.43	18.60	18.78	19
20	18.95	19.12	19.29	19.46	19.64	19.81	20
21	19.98	20.16	20.33	20.51	20.68	20.86	21
22	21.03	21.21	21.39	21.56	21.74	21.92	22
23	22.10	22.28	22.45	22.63	22.82	23.00	23
24	23.18	23.36	23.54	23.72	23.91	24.09	24
25	24.28	24.46	24.64	24.83	25.02	25.20	25
26	25.39	25.58	25.77	25.95	26.14	26.33	26
27	26.52	26.72	26.91	27.10	27.29	27.49	27
28	27.68	27.87	28.07	28.26	28.46	28.66	28
29	28.86	29.05	29.25	29.45	29.65	29.85	29
30	30.05	..	..	..	..	..	30



## Appendix XI

MAP showing REDUCTIONS (in minutes) from STANDARD TIME (clock time) to LOCAL MEAN TIME in QUEENSLAND.

STANDARD TIME in QUEENSLAND is the mean time of the 150th meridian of East Longitude (see Section 3 of "The Standard Time Act of 1894.")

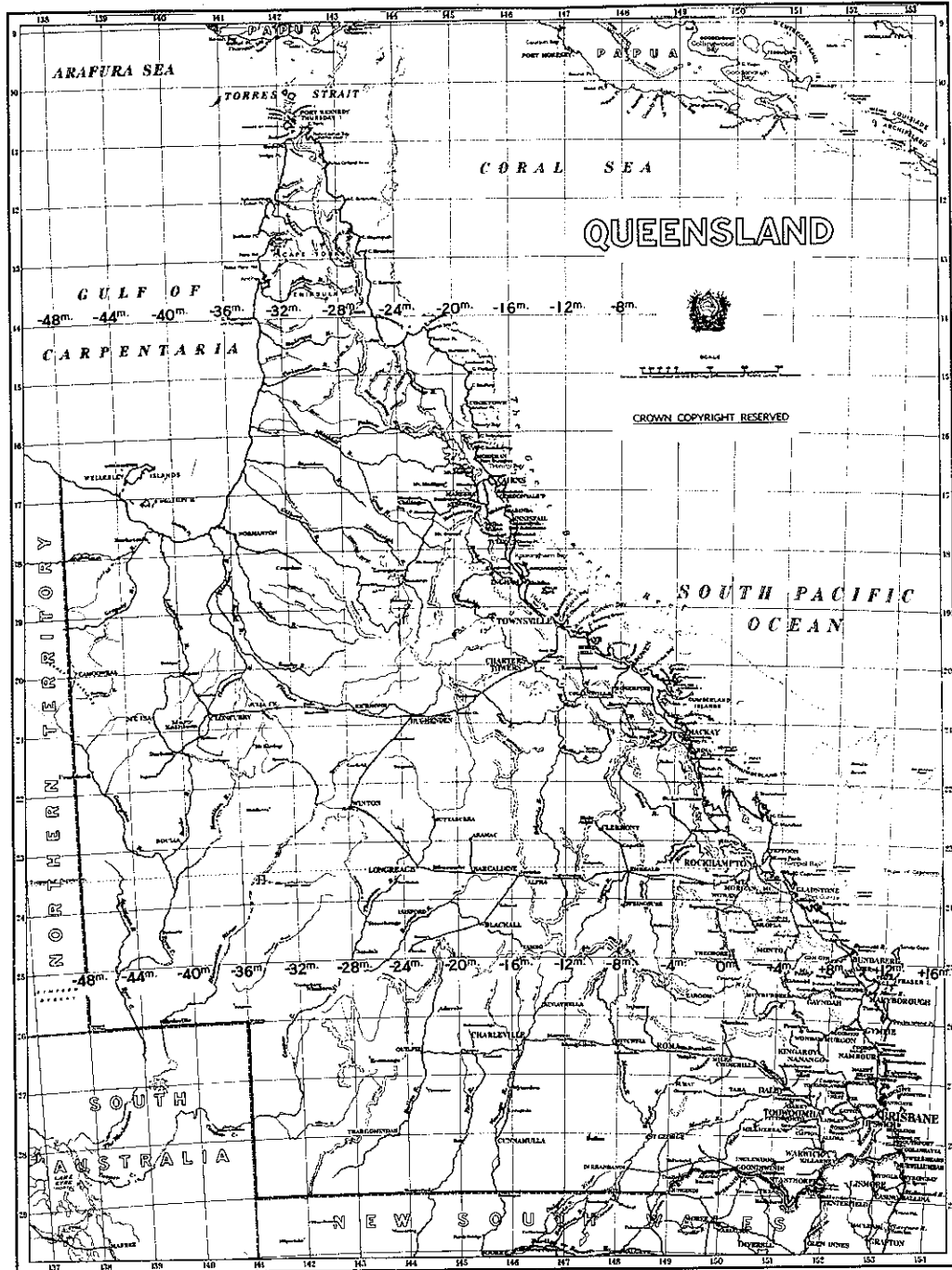


Table of Lengths of Half a Degree, a Minute, and a Second of Latitude, from Latitude 10° S. to Latitude 30° S.

Latitude	LENGTH OF—			Latitude	Latitude	LENGTH OF—			Latitude
	Half Degree	One Minute	One Second			Half Degree	One Minute	One Second	
° /	Statute Miles	Links	Links	° /	° /	Statute Miles	Links	Links	° /
10 0	34-363	91 63-6	152-72	10 0	20 0	34-394	91 71-8	152-86	20 0
10 30	-364	63-8	-73	10 30	20 30	-396	72-3	-87	20 30
11 0	-365	64-1	-74	11 0	21 0	-398	72-8	-88	21 0
11 30	-367	64-4	-74	11 30	21 30	-400	73-4	-89	21 30
12 0	-368	64-8	-75	12 0	22 0	-402	73-9	-90	22 0
12 30	-369	65-1	-75	12 30	22 30	-404	74-5	-91	22 30
13 0	-370	65-5	-76	13 0	23 0	-407	75-1	-92	23 0
13 30	-372	65-8	-77	13 30	23 30	-409	75-7	-93	23 30
14 0	-373	66-2	-77	14 0	24 0	-411	76-3	-94	24 0
14 30	-375	66-6	-78	14 30	24 30	-413	76-9	-95	24 30
15 0	-376	67-0	-79	15 0	25 0	-416	77-6	-96	25 0
15 30	-378	67-5	-79	15 30	25 30	-418	78-2	-97	25 30
16 0	-379	67-9	-80	16 0	26 0	-420	78-8	-98	26 0
16 30	-381	68-3	-81	16 30	26 30	-423	79-5	-99	26 30
17 0	-383	68-8	-82	17 0	27 0	-425	80-2	153-00	27 0
17 30	-385	69-3	-82	17 30	27 30	-428	80-8	153-01	27 30
18 0	-386	69-7	-83	18 0	28 0	-430	81-5	-02	28 0
18 30	-388	70-2	-84	18 30	28 30	-433	82-1	-03	28 30
19 0	-390	70-7	-85	19 0	29 0	-436	82-8	-05	29 0
19 30	-392	71-2	-86	19 30	29 30	-438	83-5	-06	29 30
20 0				20 0	30 0				30 0

NOTE:—The values for minutes and seconds here given are the lengths of these arcs at the middle latitude between the whole and half degrees—i.e., at 15 and 45 minutes, respectively.

## Appendix No. XIII

Tables of Lengths of a Degree, a Minute, and a Second of Longitude, for every Ten Minutes, from Latitude 10° S. to Latitude 30° S.

LATITUDE	LENGTH OF ONE DEGREE—IN STATUTE MILES						LATITUDE
	0'	10'	20'	30'	40'	50'	
10	68-128	68-093	68-058	68-022	67-985	67-948	10
11	7-910	7-872	7-833	7-793	7-753	7-712	11
12	-671	-629	-586	-543	-500	-456	12
13	-411	-366	-320	-274	-227	-179	13
14	-131	-082	-033	6-983	6-933	6-882	14
15	66-831	66-779	66-726	66-673	66-619	66-565	15
16	-510	-456	-399	-342	-285	-228	16
17	-170	-111	-051	5-991	5-931	5-870	17
18	5-808	5-746	5-683	5-620	5-557	5-493	18
19	-428	-362	-296	-229	-162	-095	19
20	65-027	64-958	64-889	64-819	64-749	64-678	20
21	4-605	4-534	4-462	4-389	4-315	4-241	21
22	-166	-091	-015	3-939	3-862	3-784	22
23	3-706	3-628	3-549	3-469	3-388	3-309	23
24	-228	-146	-064	2-981	2-898	2-814	24
25	62-730	62-645	62-559	62-473	62-387	62-300	25
26	-212	-124	-036	1-947	1-857	1-767	26
27	1-676	1-585	1-494	1-402	1-309	1-215	27
28	-121	-027	60-932	60-837	60-741	60-645	28
29	60-548	60-451	60-353	60-254	60-155	60-056	29
30	59-956	..	..	..	..	..	30

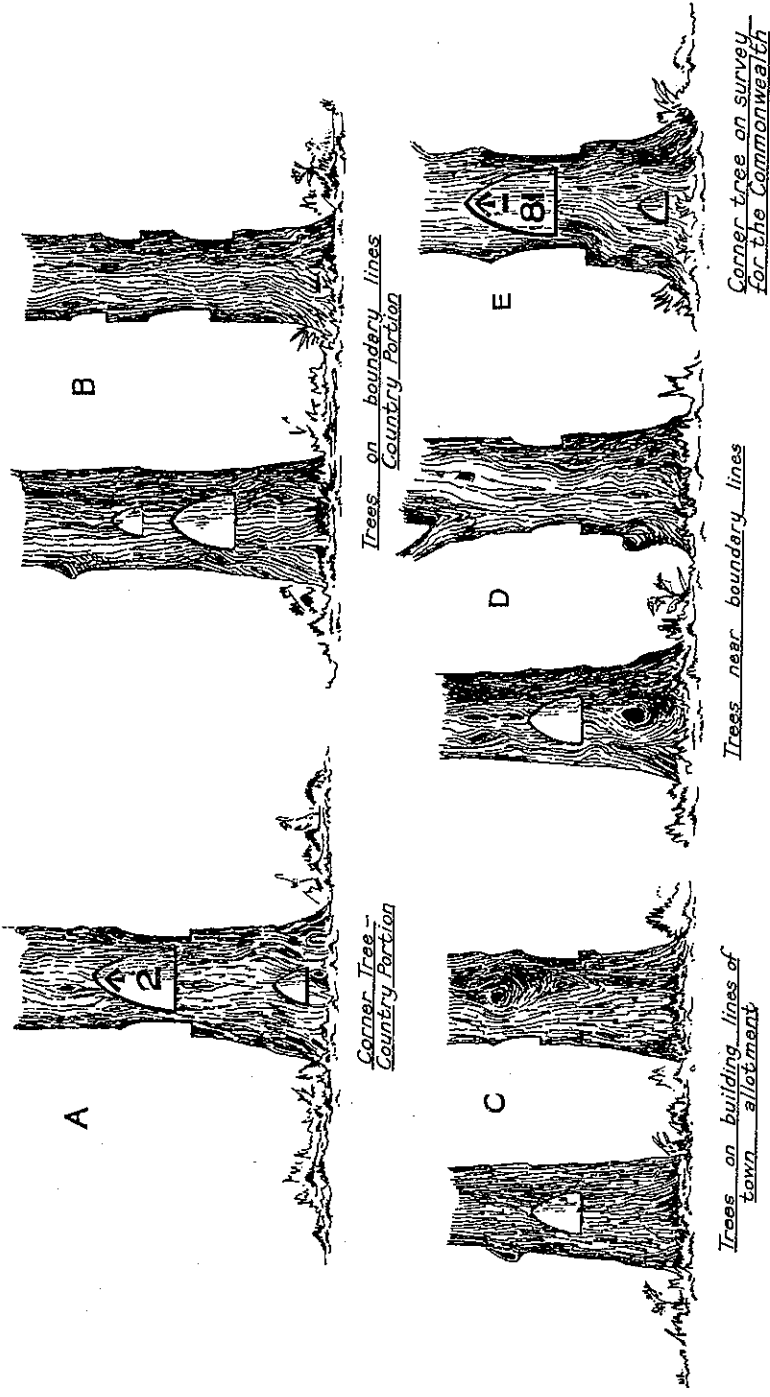
LATITUDE	LENGTH OF ONE MINUTE—IN LINKS						LATITUDE
	0'	10'	20'	30'	40'	50'	
10	90 83-9	90 79-2	90 74-5	90 69-7	90 64-8	90 59-8	10
11	54-7	49-6	44-4	39-1	33-8	28-4	11
12	22-9	17-3	11-6	05-9	00-1	89 94-2	12
13	89 88-2	89 82-2	89 76-1	89 69-9	89 63-6	57-3	13
14	50-9	44-4	37-8	31-2	24-5	17-7	14
15	89 10-8	89 03-9	88 96-9	88 89-8	88 82-6	88 75-4	15
16	8 68-1	8 60-7	53-2	45-7	38-1	30-4	16
17	22-6	14-8	06-9	7 98-9	7 90-8	7 82-7	17
18	7 74-5	7 66-2	7 57-8	49-4	40-9	32-3	18
19	23-7	15-0	06-2	6 97-3	6 88-4	6 79-4	19
20	86 70-3	86 61-1	86 51-9	86 42-6	86 33-2	86 23-7	20
21	14-2	04-6	5 94-9	5 85-2	5 75-4	5 65-5	21
22	5 55-5	5 45-5	33-4	25-2	15-0	04-7	22
23	4 94-3	4 83-8	4 73-3	4 62-7	4 52-0	4 41-2	23
24	30-4	19-5	08-5	3 97-5	3 86-4	3 75-2	24
25	83 64-0	83 52-7	83 41-3	83 29-8	83 18-3	83 06-7	25
26	2 95-0	2 83-3	2 71-5	2 59-6	2 47-7	2 35-7	26
27	23-6	11-4	1 99-2	1 86-9	1 74-5	1 62-1	27
28	1 49-6	1 37-0	24-4	11-7	80 98-9	80 86-0	28
29	80 73-1	80 60-1	80 47-1	80 34-0	80 20-8	80 07-5	29
30	79 94-2	..	..	..	..	..	30

LATITUDE	LENGTH OF ONE SECOND—IN LINKS						LATITUDE
	0'	10'	20'	30'	40'	50'	
10	151-40	151-32	151-24	151-16	151-08	151-00	10
11	150-91	150-83	150-74	150-65	150-56	150-47	11
12	-38	-29	-19	-10	-00	149-90	12
13	149-80	149-70	149-60	149-50	149-39	-29	13
14	-18	-07	8-96	8-85	8-74	8-63	14
15	148-51	148-40	148-28	148-16	148-04	147-92	15
16	7-80	7-68	7-55	7-43	7-30	-17	16
17	-04	6-91	6-78	6-65	6-51	6-38	17
18	6-24	-10	5-96	5-82	5-68	5-54	18
19	5-40	5-25	-10	4-96	4-81	4-66	19
20	144-50	144-35	144-20	144-04	143-89	143-73	20
21	3-57	3-41	3-25	3-09	2-92	2-76	21
22	2-59	2-43	2-26	2-09	1-92	1-74	22
23	1-57	1-40	1-22	1-04	140-87	140-69	23
24	140-51	140-33	140-14	139-96	139-77	139-59	24
25	139-40	139-21	139-02	138-83	138-64	138-45	25
26	8-25	8-06	7-86	7-66	7-46	7-26	26
27	7-06	6-86	6-65	6-45	6-24	6-03	27
28	5-83	5-62	5-41	5-19	4-98	4-77	28
29	4-55	4-34	4-12	3-90	3-68	3-46	29
30	3-24	..	..	..	..	..	30

Appendix XIV

METHOD OF MARKING TREES



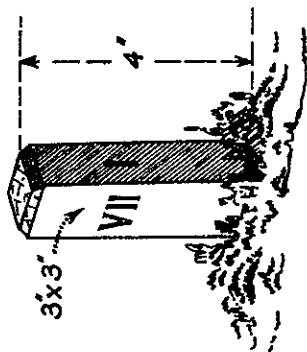
Trees on boundary lines  
Country Portion

Corner Tree -  
Country Portion

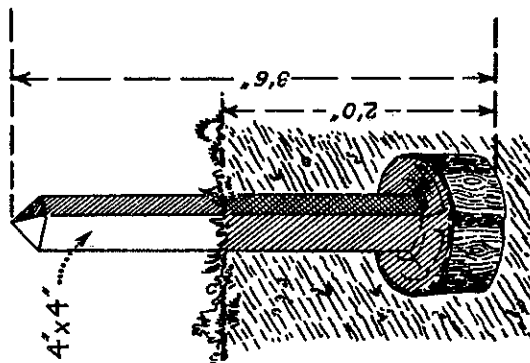
Trees on building lines of  
town allotment

Trees near boundary lines

Corner tree on survey  
for the Commonwealth

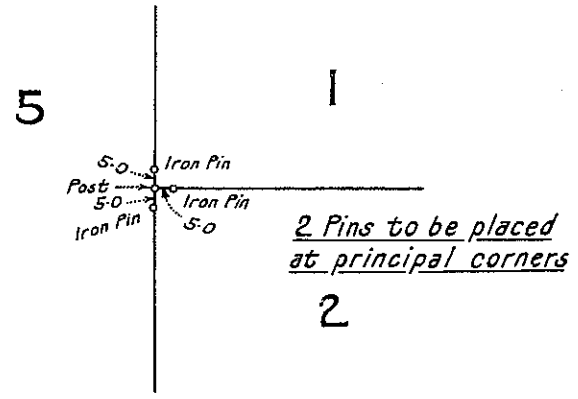
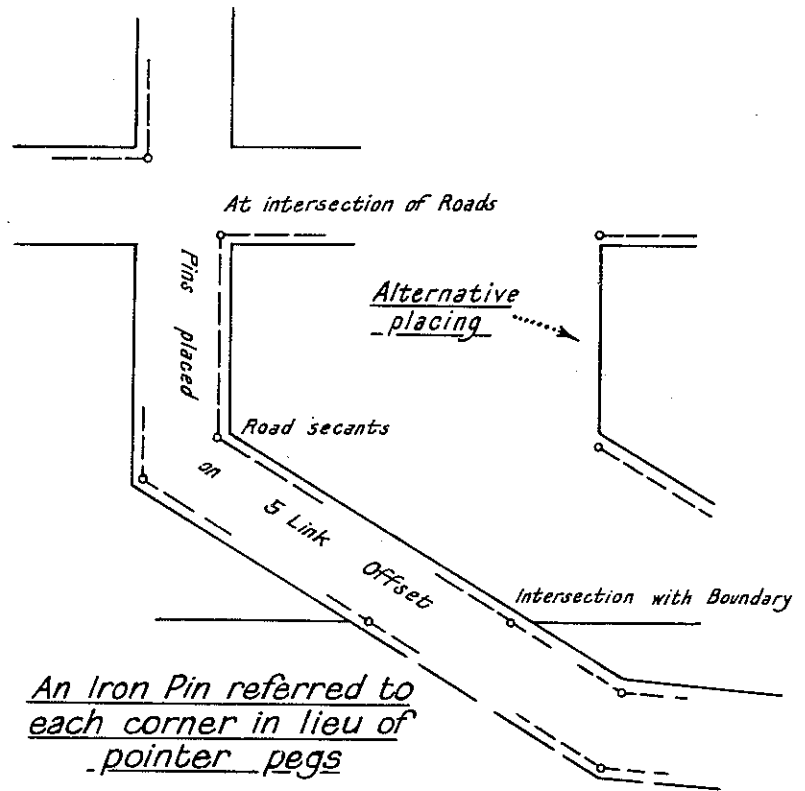


Corner Peg. Town Section  
showing section and  
Allotment numbers



Corner Post. Country Portion  
showing butt.





Methods of placing Iron Pins at corners on boundaries & roads





Secants

$$\begin{array}{r} \text{Sta 8-9} \\ 264^{\circ} 41' \\ \underline{270} \\ 5^{\circ} 19' \end{array} \quad \begin{array}{l} \text{Sec} = 150.6 \\ \text{tan} = 14.0 \end{array}$$

$$\begin{array}{r} 5526 \\ - 14 \\ \hline 5512 \end{array}$$

From Sta 12 across Road

$$\begin{array}{r} 159^{\circ} 37' \\ 109^{\circ} 10' \\ \underline{50^{\circ} 27'} \end{array} \quad \begin{array}{l} \text{600 wide} \\ \text{Sec} = 942.3 \\ \frac{1}{2} (471.15) \end{array}$$

Sta 41-41a

$$\begin{array}{r} 268^{\circ} 30' \\ \underline{240} \\ 28^{\circ} 30' \\ \underline{14^{\circ} 15'} \end{array} \quad \begin{array}{l} \text{300} \\ \text{Sec} = 309.5 \\ \text{tan} = 76.2 \end{array} \quad \begin{array}{r} \text{Run} \\ 88^{\circ} 30' \\ \underline{240} \\ 328^{\circ} 30' \\ \underline{164^{\circ} 15'} \end{array} \quad \begin{array}{l} \text{Iron Pin on Sec} \\ = 5.16 \end{array}$$

Iron Pins

$$\begin{array}{r} 226^{\circ} \quad 45^{\circ} \\ \underline{195} \quad \underline{195} \\ 2) 30^{\circ} \quad 2) 240 \\ \underline{15} \quad \underline{120} \end{array} \quad \begin{array}{l} \text{Sta 43} \\ 300 - 5.18 \end{array}$$

Sta 42

$$\begin{array}{r} 268^{\circ} 30' \\ \underline{195} \\ 73^{\circ} 30' \\ \underline{36^{\circ} 45'} \end{array} \quad \begin{array}{r} 88^{\circ} 30' \\ \underline{195} \\ 283^{\circ} 30' \\ \underline{141^{\circ} 45'} \end{array} \quad 321^{\circ} 45' - 6.24$$

Sta 58

$$\begin{array}{r} 358^{\circ} 30' \\ \underline{22^{\circ} 29'} \\ 23^{\circ} 59' \end{array} \quad \begin{array}{l} \text{Sec} = \\ 5.47 \end{array}$$

Appendix No. XIX

For No	Farm No	Selector	D and D Section	Remarks	Port No	Farm No	Selector	Land to be added on	Remarks
--------	---------	----------	-----------------	---------	---------	---------	----------	---------------------	---------

**SURVEY OFFICE**

No. \_\_\_\_\_

Date \_\_\_\_\_

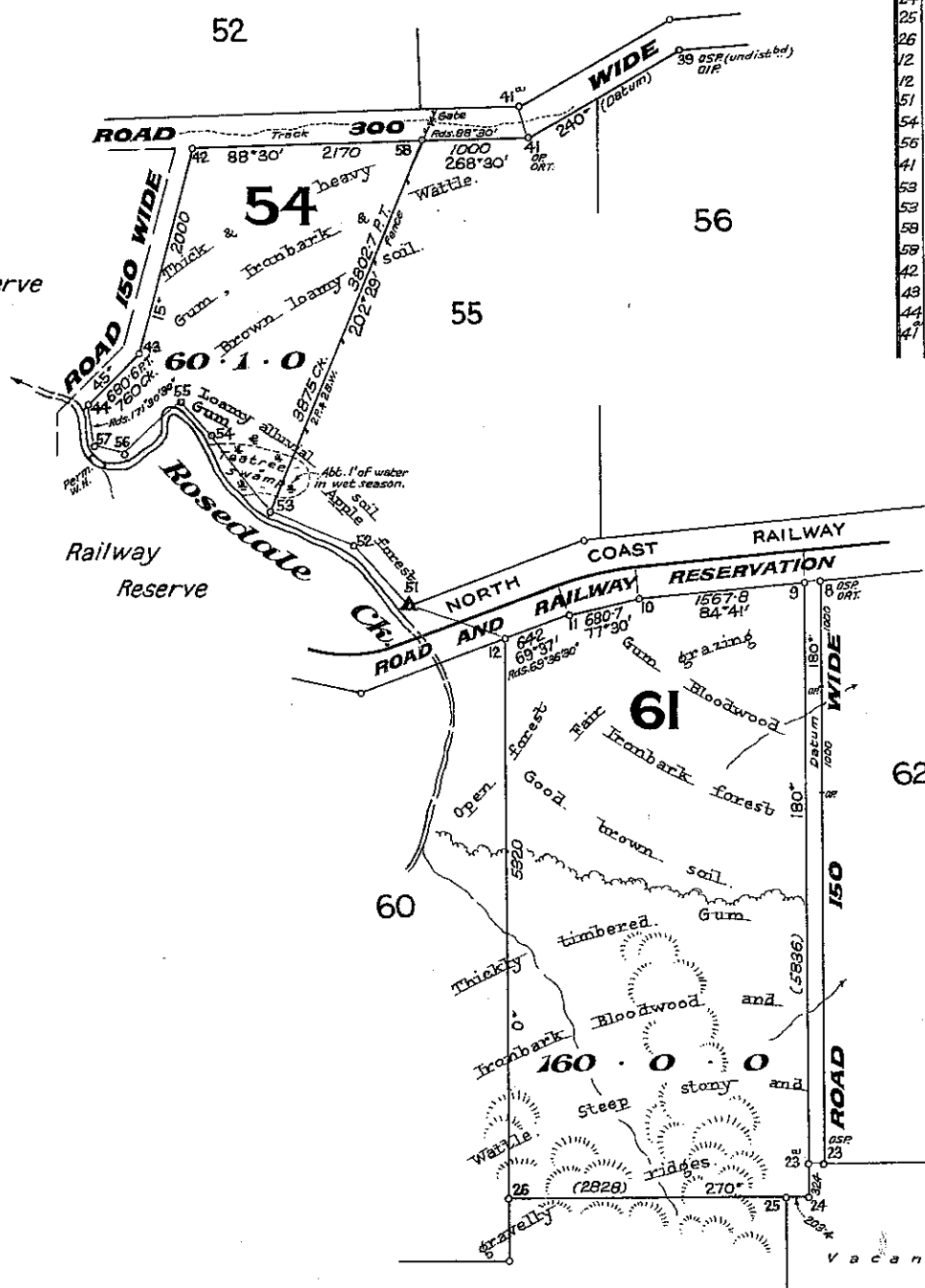
**QUEENSLAND**

Traverses and Secants

Line	Bearing	Dist.
8 <sup>76</sup>	264°41'	150.6
9 <sup>84</sup>	0°	301.3
10	354°41'	300.
11	339°37'	300.
12	289°10'	471.15
12 <sup>51</sup>	289°10'	542.3
23	90°	150.
51-52	318°	772.3
52-53	293°	844.2
53-54	323°	907.
54-55	319°	434.
55-56	228°	724.
56-57	287°	300.
57-44	351°30'	394.
41-41	344°15'	303.5

Reference to Corners

Cor	Bearing	From	Dist.	Remarks
8	330°10'	Ironbk	17.7	A. 62. R.
9	11°35'	Ironbk	37.5	A. 61. R.
10	147°25'	Gum	71.0	A. R. 61.
11	266°	Ironbk	69.0	A. 61. R.
24	104°53'	"	61.0	A. 61.
25	62°50'	Bldwd.	17.1	A. RES.
26	293°47'	Gum	37.5	A. RES. 61.
12	62°15'	Ironbk	33.2	A. 60.
12	270°45'	Gum	30.3	A. 61.
51	257°42'	"	23.0	A. R. 55.
54	217°35'	Apple	36.2	A. T. 54.
56	195°13'	Gum	26.8	A. T. 56.
41	85°	Massm.	24.5	A. 55. R.
53	47°30'	Bldwd.	40.0	A. 54.
53	241°10'	Gum	17.2	A. 55.
58	31°12'	"	41.3	A. 54.
58	320°	"	27.2	A. 55.
42	348°40'	"	40.6	A. 54. R.
43	105°45'	"	77.5	A. 54. R.
44	237°10'	"	90.3	A. 54. R.
41		Peg		



Camping Reserve

Iron Pins

Pin	Bearing	Dist.
9 <sup>76</sup> pin	264°41'	5.0
9	180°	5.0
10	84°41'	5.0
11	249°37'	5.0
12	69°37'	5.0
12	180°	5.0
24	180°	5.0
24	270°	5.0
26	90°	5.0
26	0°	5.0
51	69°37'	5.0
53	113°	5.0
39 <sup>76</sup> pin	240°	3.0
41 pin	344°15'	5.16
53	22°29'	5.0
58	22°29'	5.47
58	268°30'	5.0
42	321°45'	6.24
42	195°	5.0
43	300°	5.18
44	45°	5.0
44	315°	5.0

Adjustments

For	Reference	Previous Area	Date	Charted
-----	-----------	---------------	------	---------

CROWN COPYRIGHT RESERVED



PLAN OF

PORTION No. 54 & 61  
 PARISH OF TOTTENHAM  
 County of Flinders  
 Land Agents' Bundaberg  
 District of  
 Cat. No. SPECIMEN

I hereby certify that I, in person, made, and on the 22-10-1955 completed the survey represented by this plan, on which are written the bearings and lengths of the lines surveyed by me, and that the survey has been executed in accordance with the existing regulations of the Surveyor General's Department.

Thomas Brown, *Auth.*  
 Surveyor

Meridian Observations

Height	Date	Lat.	Long.	Variation
51	20-10-55	24°38'	151°55'54"	7°50'50"
				7°50'47"

C.A.M.

Date of Instructions 18-8-55; 55.2345 Pl.  
 Date of transmission of plans &c. 30-10-55  
 Examined by Calc. Book No.  
 Voucher No. Payment (Adv. Bal.)  
 Charted by  
 Sales Register Vol. Fol.  
 Scale 20 Chains to an Inch.

Appendix No. XX

Form No	Farm No	Selector	U and D (marked on)	Remarks	Form No	Farm No	Selector	U and D (marked on)	Remarks
---------	---------	----------	---------------------	---------	---------	---------	----------	---------------------	---------

**SURVEY OFFICE**  
 No. ....  
 Date .....

Traverses and Secants

Line	Bearing	Dist.
3	20°	150
5-6		
5-7	100° 16'	101.48
7-24	20°	152.19
8-9	100° 16'	20
8-32	10° 16'	150
9-33		
10-31		
11-12	190° 16'	100
14-20	100° 16'	20
14-15		
20-21		
15-21	100° 16'	20
16-22		

**Iron Pins**

1 <sup>st</sup> off	290°	2.4
1	34° 2'	2.84
2	280°	2.4
4 <sup>th</sup> off	283° 10'	2.22
6 <sup>th</sup> off	199° 26'	3.0
7	Pin pld. at Stn.	
10		
11		
12		
13		
17 pin	280° 16'	5.0
18	120° 35'	25
19	100° 16'	
23	Pin pld. at Stn.	

**Permanent Marks**

13	21° 10' 16"	15
----	-------------	----

Reference to Corners

Cor	Bearing	From	Dist.	Mark
-----	---------	------	-------	------



General Description of Country: Thickly and heavily timbered with Bloodwood, Gum, Box, Oak and Cypress, with continuous undergrowth, Springs and Creeks, dry and undulating stand ridges.

Note: Measurements are to 20 links. Pins placed at all new corners unless otherwise shown.

Adjustments

Part	Reference	Previous Area	Date	Impact

Meridian Observations

Date	Lat	Long	Variation

A. S. Brisbane 25.2.  
 Date of Instructions 17.4.59; 59.11.48 Shires  
 Date of transmission of plan &c. 3.7.59  
 Examined by 10/15/54 etc. Book No.  
 Voucher No. Payment  
 Charted by  
 Sales Register Vol. ... Fol.  
 Scale 3 Chains to an Inch.

TOWN OF BONGAREE

Allots. 1<sup>st</sup> to 38<sup>th</sup> of SECTION 31;  
 Allots. 1<sup>st</sup> to 29<sup>th</sup> of SECTION

Position No. 32  
 PARISH OF Woorim  
 County of Canning  
 Land Agents Brisbane  
 District of  
 Cat. N° SPECIMEN

I hereby certify that I, in person made and on the 12.6.1959 completed the survey represented by this plan on which are written the bearings and lengths of the lines surveyed by me, and that the survey has been executed in accordance with the existing regulations of the Surveyor General's Department.

Thomas Brown. *Auth. Surveyor*

# Appendix No XXI

Form No	Farm No	Selector	D and D placed on	Remarks	Form No	Farm No	Selector	D and D placed on	Remarks

**SURVEY OFFICE**

No. \_\_\_\_\_

Date \_\_\_\_\_

**QUEENSLAND**

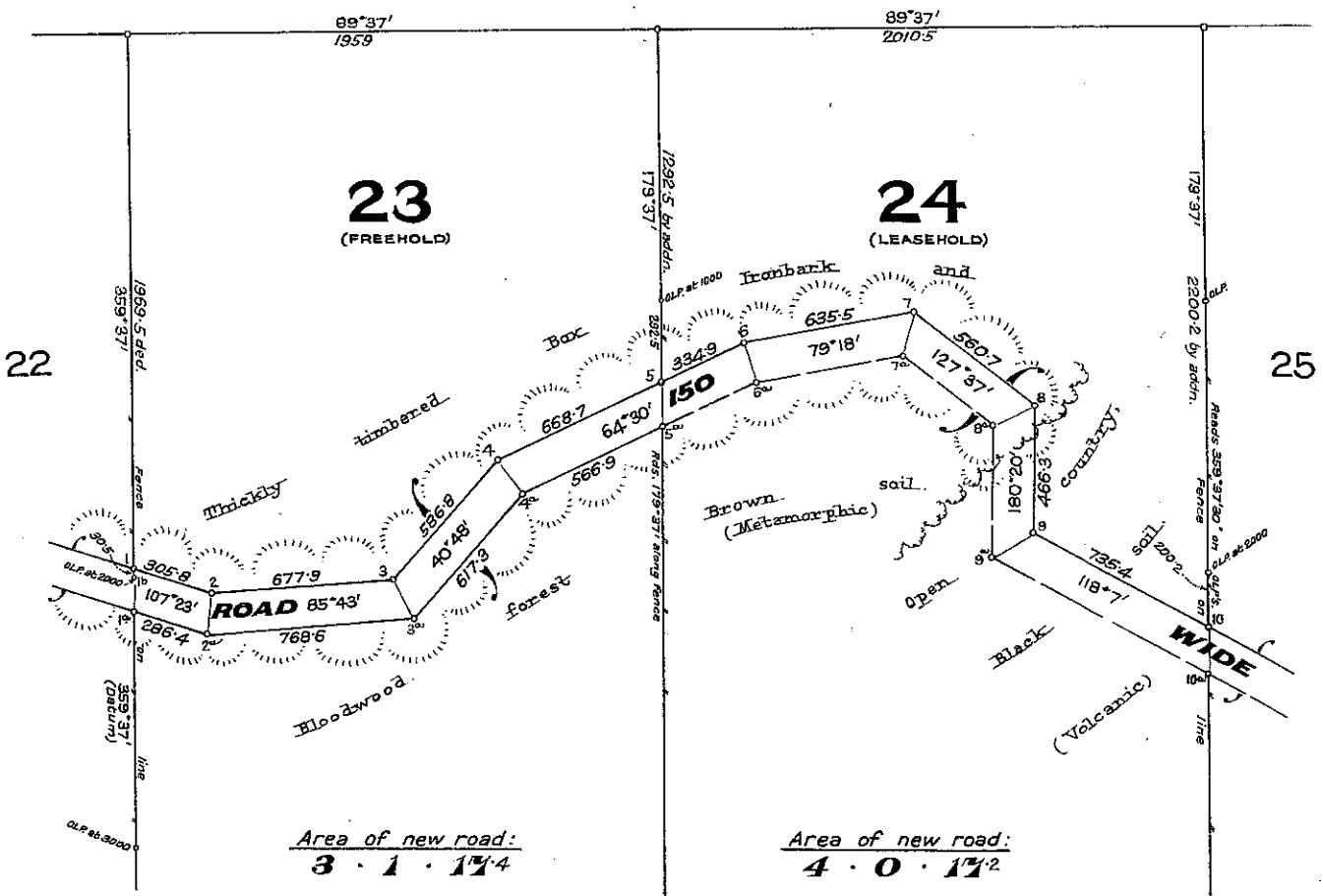
**Traverses and Secants**

Line	Bearing	Dist.	Remarks
1-1 <sup>76</sup>	179°37'	157.5	6 <sup>76</sup> pin 161'54" 5-04
2-2 <sup>6</sup>	186°33'	152.7	6 <sup>6</sup> " 341'54" "
3-3 <sup>7</sup>	153°15'	162.8	7 <sup>7</sup> " 193'27" 5-28
4-4 <sup>7</sup>	142°39'	153.3	7 <sup>7</sup> " 13°27' "
5-5 <sup>8</sup>	179°37'	165.7	8 <sup>8</sup> " 243'58" 5-58
6-6 <sup>8</sup>	161°54'	151.9	8 <sup>8</sup> " 63'38" "
7-7 <sup>9</sup>	199°27'	164.4	9 <sup>9</sup> " 239'13" 5-84
8-8 <sup>9</sup>	243°58'	167.4	9 <sup>9</sup> " 59'13' "
9-9 <sup>10</sup>	239°13'	175.2	10 <sup>10</sup> " 179'37" 5-69
10-10 <sup>10</sup>	179°37'	170.7	10 <sup>10</sup> " 359'37" "

**Reference to Corners**

Cor.	Bearing	From	Dist.	Marks
1	60°50'	Box	44.3	A. R. 23
2	330°	"	14.5	" "
2	27°50'	Ironbk	6.1	A. R.
2	76°20'	"	23.5	" "
3	226°50'	"	29.1	" "
3	240°10'	"	34.7	" "
4	205°50'	Bloodw	23.1	" "
4	236°15'	Box	18.5	" "
5	97°30'	Gum	24.8	A. R. 23 & 24
5	56°50'	Ironbk	10.5	" "
6	259°30'	"	4.1	A. R.
6	56°40'	"	15.6	" "

27



**Iron Pins**

1 <sup>76</sup> pin	179°37'	5-26
1 <sup>6</sup> "	359°37'	"
2 "	186°33'	5-09
2 <sup>6</sup> "	6°33'	"
3 "	153°15'	5-41
3 <sup>6</sup> "	339°15'	"
4 "	142°39'	5-11
4 <sup>6</sup> "	322°39'	"
5 "	179°37'	5-52
5 <sup>6</sup> "	359°37'	"

**Adjustments**

Dist.	Reference	Previous Area	Date	Charted

I hereby certify that I, in person, made, and on the 4. 6. 1962 completed the survey represented by this plan, on which are written the bearings and lengths of the lines surveyed by me, and that the survey has been executed in accordance with the existing regulations of the Surveyor-General's Department.

*Thomas Brown.*  
Auth. Surveyor

CROWN COPYRIGHT RESERVED

**Meridian Observations**

Station	Time	Lat.	Long.	Corrections
<b>C.A.M.</b> vide Cg: 2052				

Date of Instructions R.C. 27982 22. 3. 62; 62.4671 RL.  
Date of transmission of plans &c. 8-6-62  
Examined by Calc. Book N°  
Voucher N° Payment (Adv. Bal.)  
Charted by  
Subs. Register Vol. Fol.  
Scale 8 Chains to an Inch.



**PLAN OF**  
**Proposed road in**  
**PORTION N° 23 & 24**  
**PARISH OF MOOLOOLAH**  
**County of Canning**  
**Land Agent's Brisbane**  
**District of**  
**Cat. N° SPECIMEN**

# Appendix No. XXI

Por. No.	Farm No.	Selector	D and D passed on	Remarks	Por. No.	Farm No.	Selector	D and D passed on	Remarks
----------	----------	----------	-------------------	---------	----------	----------	----------	-------------------	---------

**SURVEY OFFICE**

No. \_\_\_\_\_

Date. \_\_\_\_\_

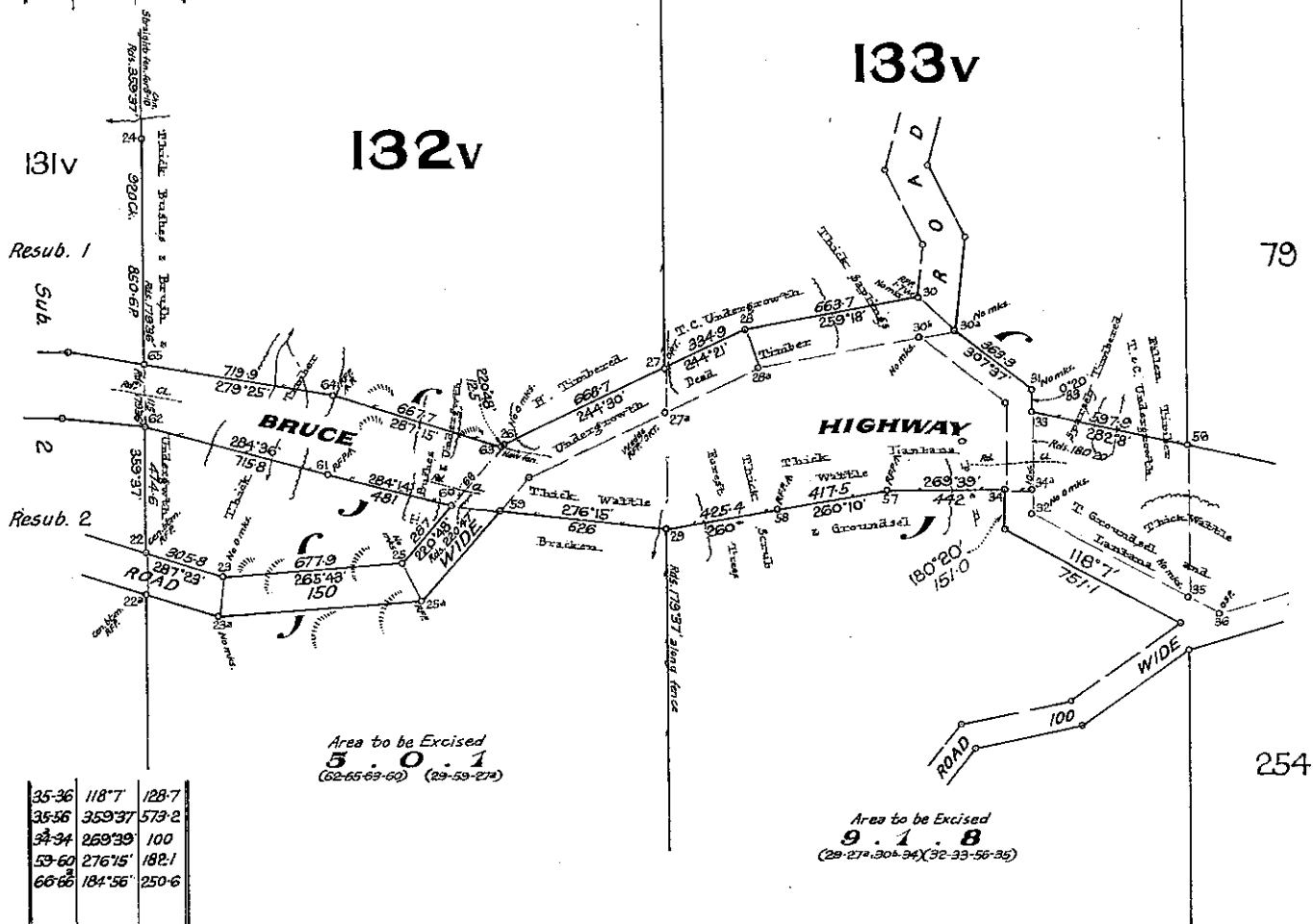
**QUEENSLAND**

**Traverses and Secants**

Line	Bearing	Dist.
22-22	179°37'	157.9
62-65	359°37'	235
23-23	186°33'	152.7
25-25	153°15'	163.8
60-63	40°48'	287.3
27-27	179°37'	165.9
27-29	-	602.7
30-30	132°46'	186.6
28-28	161°49'	151.3
30-30	253°18'	133.9
33-34	180°20'	291.5
34-32	-	91.8
32-35	118°7'	659.8

**Reference to Corners**

Cor.	Bearing	From	Dist.	Mark
27	97°7'	Org. Stamp.	9.2	A
27	56°27'	-	24.8	-
56	-	Peg.	-	A73, 133v, R
33	-	-	-	-
34	-	-	-	-
29	-	-	-	132v, 133v, R
60	-	-	-	A.R.
65	-	-	-	132v, 131v, R
59	-	-	-	A.R.
62	-	-	-	132v, 131v
63	-	-	-	A.R.



35-36	118°7'	128.7
35-56	359°37'	573.2
34-34	269°39'	100
59-60	276°15'	182.1
66-66	184°56'	250.6

Area to be Excised  
**5.0.1**  
(62-65-63-60) (29-59-27)

Area to be Excised  
**9.1.8**  
(29-27-30-34)(32-33-56-35)

Iron Pins		
33-Pin	282°8'	3.0
34 -	0°2'	-
29 -	334°36'	3.3
56 -	179°37'	3.0
57 -	299°11'	3.45
58 -	312°30'	3.6
59 -	40°47'	3.0

**Adjustments**

Por.	Reference	Previous Area	Date	Charted

Thereby certify that I, in person, made and on the 1. 5. 1962 completed the survey represented by this plan on which are written the bearings and lengths of the lines surveyed by me, and that the survey has been executed in accordance with the existing regulations of the Surveyor General's Department.

Thomas Brown

Meridian Observations				
Date	Lat.	Long.	Variation	GA

CROWN COPYRIGHT RESERVED

RC.27006  
Date of Instructions 17. 1. 62, 61. 85-46 PL  
Date of Transmission of plans &c. 9. 5. 62

Examined by \_\_\_\_\_ Calc. Book No. \_\_\_\_\_  
Voucher No. \_\_\_\_\_ Payment \_\_\_\_\_  
Charted by \_\_\_\_\_ Sales Register Vol. \_\_\_\_\_ Fol. \_\_\_\_\_

Scale 8 Chains to an Inch.



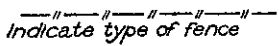
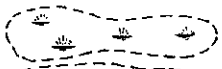
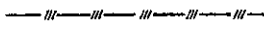
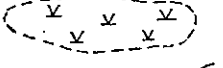
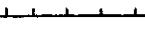

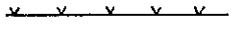



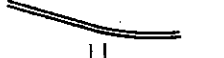





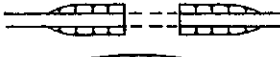

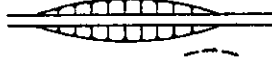

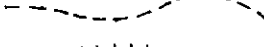

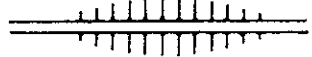
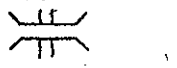





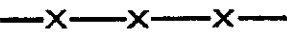
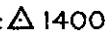
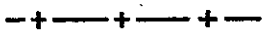
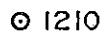
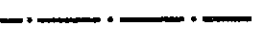


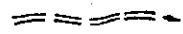

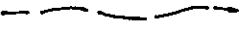
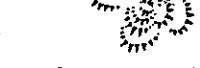
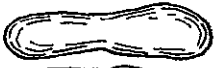



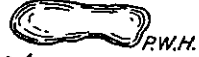


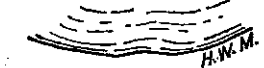

**PLAN OF**  
Excision from  
Portion Nos. 132v & 133v  
PARISH OF TUCHEKOI  
County of March  
Land Agents  
District of Gympie  
Cat. No. **SPECIMEN**

# Appendix XXIII

Queensland.  
"The Survey Co-ordination Act of 1952."

Regulation 8(a)

## SYMBOLS TO BE USED ON PLANS OF CADASTRAL SURVEYS.

FENCE		SWAMP	
NETTING FENCE		MANGROVES	
TELEPHONE & TELEGRAPH LINES		BORE & DRAIN	
POWER LINE		TANK (earth)	
RAILWAY SINGLE TRACK		DAM	
RAILWAY DOUBLE "		WEIR	
SUBWAY UNDER RAILWAY		TIMBER EDGE	
ROAD OVERBRIDGE		SCRUB or JUNGLE	
TUNNEL		QUARRY	
CUTTING		GRAVEL PIT	
TRACK		BUILDING	 (Approx. shape. Add description.)
EMBANKMENT		ORIGINAL PEGS	O.P.
BRIDGE & CULVERT		ORIGINAL POST	O.S.P.
SURVEYED LINE		ORIGINAL REFERENCE TREE	O.R.T.
UNSURVEYED LINE		FENCE POST	F.P.
TRAVERSE LINE		ROUND FENCE POST	R.F.P.
SURVEY STATIONS	 Small circle with number.	SQUARE FENCE POST	S.F.P.
OBSERVATION STATIONS	 Brown triangle.	STATE BOUNDARY	
TRIGONOMETRICAL STNS. 1st. & 2nd. order	 1400	COUNTY BOUNDARY	
" " 3rd. & 4th. "	 1210	PARISH BOUNDARY	
BENCH MARKS	• B.M. No.	CREEKS & RIVERS — traversed	
ASTRONOMICAL STATION		" " not "	
RIDGE OR RANGE		GULLY	
PEAK		LAKE or LAGOON	
CLIFFS		WATER HOLE	
ROCKY FORESHORE		PERMANENT WATER HOLE	
LIGHTHOUSE		WINDMILL	
COASTLINE & HIGH WATER MARK		WELL	•
SAND		PERMANENT MARK	○

**SURVEY OF**

**PORTIONS Nos** 54 & 61

**PARISH OF** *Tottenham*

**County of** *Flinders*

**Land Agent's  
District of** } *BUNDABERG*

**Surveyed by** *Thomas Brown*

**Cat. No.** SPECIMEN

The title of each survey is to be entered at its commencement in the field book; the date of instructions for survey and the dates of commencement and completion thereof are also to be entered and signed by the Surveyor.

The instrument used to define the direction of surveyed lines should be stated, as Theodolite, Circumferentor, or Compass, as the case may be.

The details of the survey should be prefaced by a description of the datum upon which the survey is based, and how it has been determined.



C.H. 111.

orig. marks. - Bearing  $180^{\circ}$  on  
of Por. 62 as determined by  
Datum: - The western bndy

Survey, Commenced Oct. 18<sup>th</sup> 55

August 18<sup>th</sup> 1955.

Instructions 55.2345 P.L.

L.A.D. OF BUNDABERG  
County of Flinders  
Parish of Tottenham  
PORTIONS 54 & 61

Theodolite Survey of

fourth day of January 1955

as determined by comparison made on the

in length with standard steel tape No. 414

The steel tape used on this Survey agrees

Thomas Brown  
Authd Surveyor.

(Chain Standard at 62°F.)

Totals

Slope and  
Hypotenusal  
Measurement

Corr. for  
Slope

Corr. for  
Temp.

Temperature

700


$\begin{array}{r} .12 \\ .40 \\ +.04 \\ \hline .48 \\ .4 \\ \hline \end{array}$

Green

500

+R.15'

Good

Centre —   
BUNDA BERG

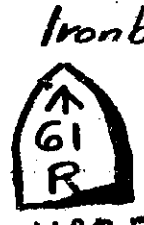
+04

700

200

-49°31' Post.

$\begin{array}{r} .12 \\ \hline \end{array}$



11°35'  
37.5

Ironbark Iron. C 155.6

150.6



ROAD

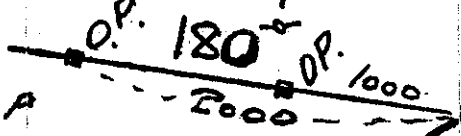
0°  
301.3

$\begin{array}{r} 270 \\ 264^{\circ}41' \\ \hline 5^{\circ}19' \\ \hline \text{Sec } 150^{\circ}5' \end{array}$

200  
+R  
(E)

ROAD

DATUM



(From O.S.A



O.S. Post.

(84°41'00)  
(169°22'00)

70°

Orig. Ironbark.

264°41'

62



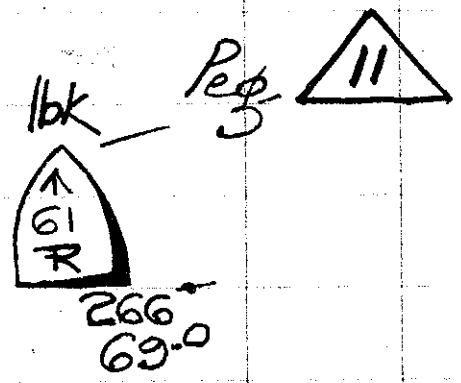
330°10'  
17.7

boundary of POR 61  
and along northern  
Thence across Road  
Corner of POR. 62  
Commencing at the N.W.

681.5  
-0.78

680.7

281.5  
±



+0.02 600

400

Gum



RAILWAY

400  
+3°40' 0.80

forest



147°25'  
71.0

68°

257°30'

257°30'

264°41'  
250 19'

2) 515 00  
257°30'

1719.1

+0.03  
-0.48  
-0.20

Ironbark

grassed

1718.4

19.1  
±  
-0.65

Peg



354°41'

300

Iron (1713.4) Pin

1700

+0.03 1000

500  
±  
(Level)



Fairly well

RESIN

Soil

(Metamorphic)

GLADSTONE

1200

Line

500  
+1°30' 0.2

Bloodwood

brown

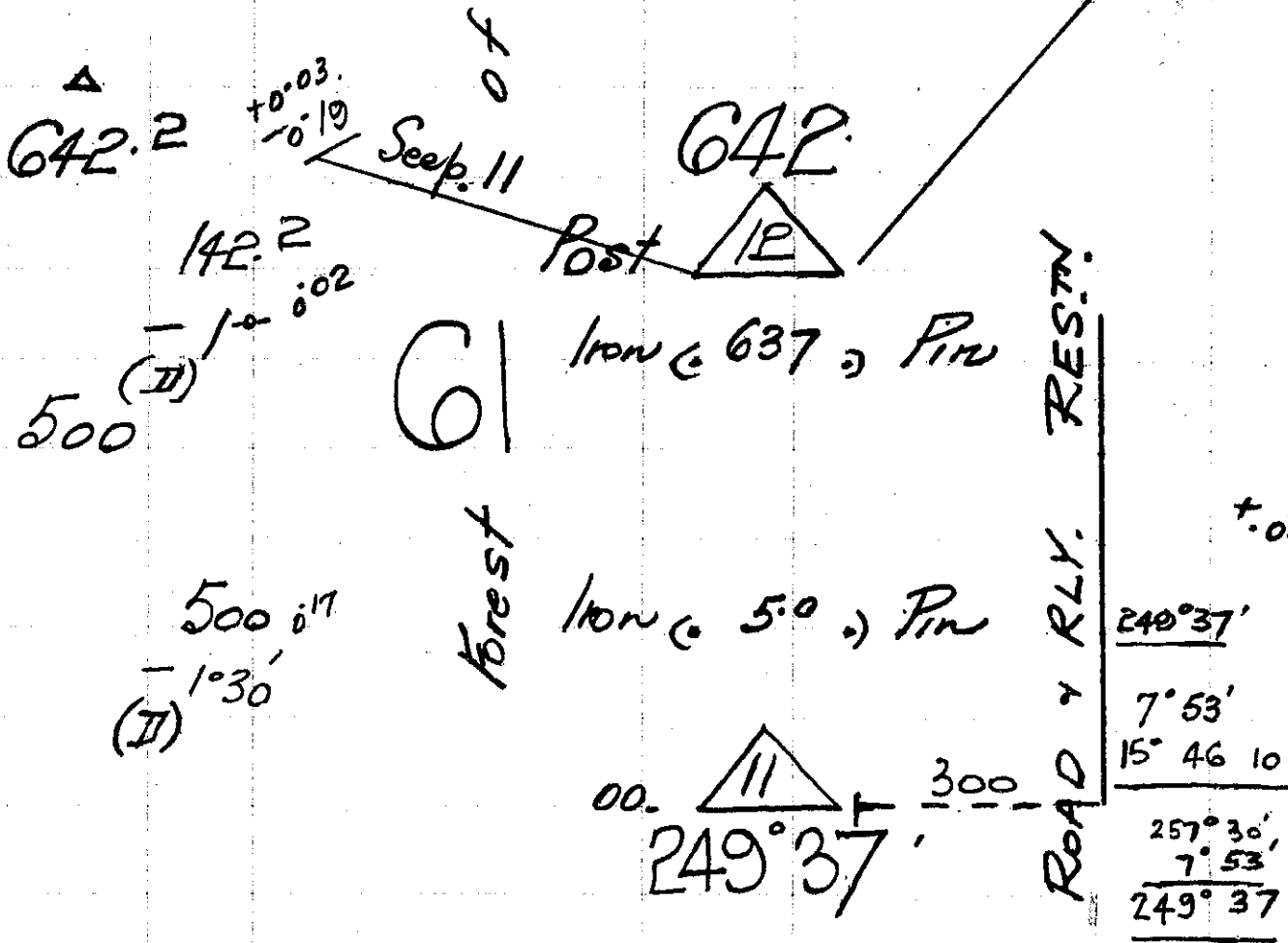
Peg 740

RLY

67°

barney

Along East boundary of PORG



2500

500 <sup>0.81</sup>  
+3°16'

2000

(+1.7 to Peg)  
+0.07  
-1.77

Peg 2000

+0.07 1000

200

+3°02.27

1800

500 <sup>0.39</sup>  
+2°15'

1300

300 <sup>0.06</sup>  
+1°10'

1000

+0.05  
-1.1

Peg 999

+0.05 1000

500

-2°10' <sup>0.35</sup>

bark

500

+0.75

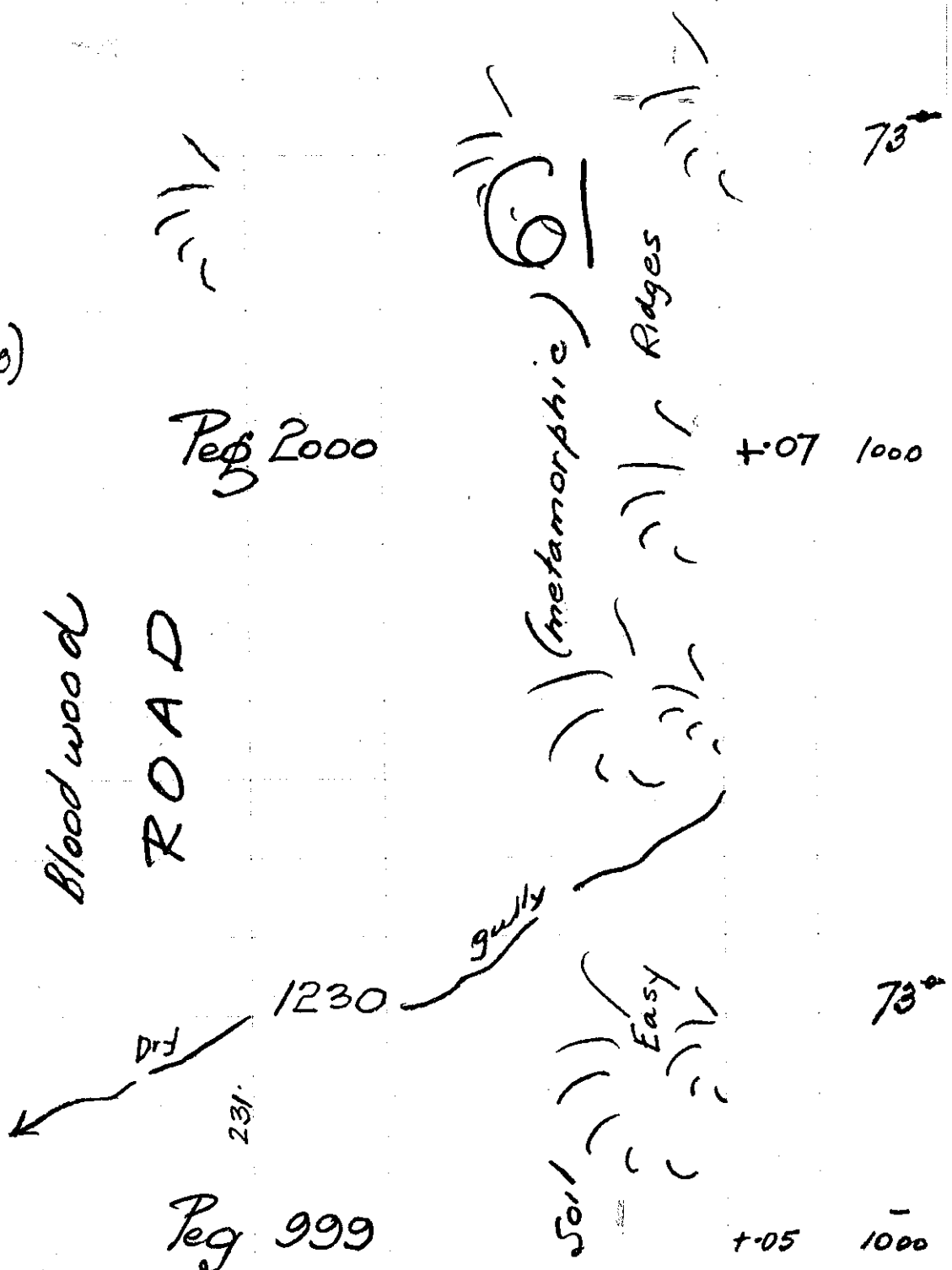
Peg. 499.3

500 <sup>0.75</sup>

Iron @ 5.0 Pin

brown

See p. 2



400 1.00  
+4°05'

4600 -6.19  
+0.07

300 0.57  
+3°30'

4300

300 0.60  
+3°40'

4000 +5.0 to leg  
-5.10  
+0.08

500 1.30  
+4°10'

3500

500 0.60  
+2°50'

3000 +0.07  
-3.27

500 0.76  
+3°10'

ponbar.

Gum

timbered dry

Thickly

150 k.

Peg 4593.9

R O A D

Peg 4000

Peg 2996.8



Gully

soil

brown

Good

+0.07 600

80

+0.08 1000

74

+0.07 1000

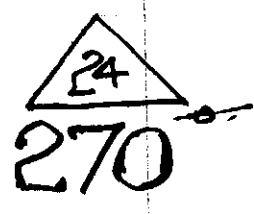
200<sup>072</sup>  
+ 4°50'

land  
WetHe

Iron c 5° Pin.

(7)

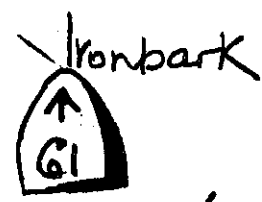
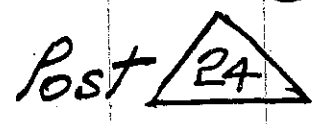
82°



Along South brdy. of Por 61

△  
5844.8  
- 8.83  
+ 0.04  
44.8  
8.79  
±

Crown  
+50 (5841) Iron Pin  
5836



104°53'  
61-0

5800  
300  
+ 4°14' 0.81

Vacant  
Bloodwood  
Post. 23

150 5512

+04 300

5500  
+ 20.0  
- 8.06  
+ .06

500  
+ 3°40' 1.00

wide  
Ridges.

+06 500

5000  
- 7.12  
04

Pe 4992.9

82°

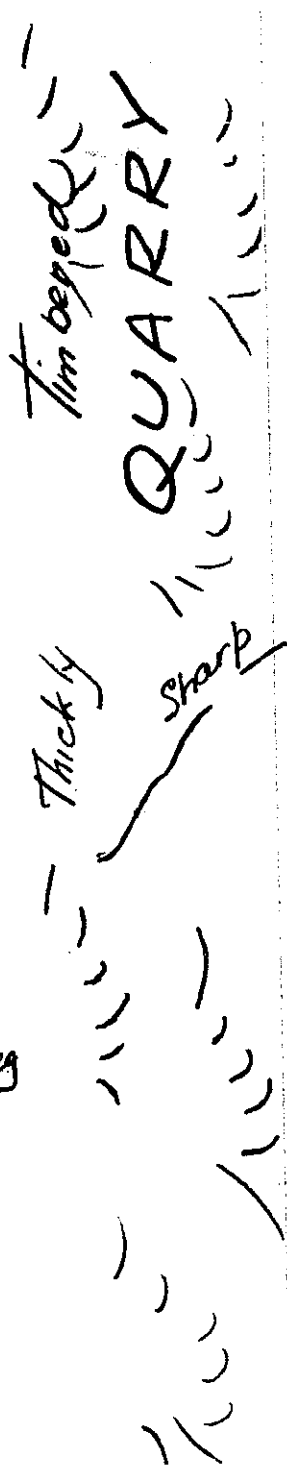
+04 400

2000

400  
+5°40' 1.96

1600

300  
+6°33' 1.95  
-12°30' 0.07



1587.8 Peg.

Gully & base

+0.07 600

75°

1300

300  
+9°50' 4.41

1330

Stony (Schist)

80°

1000

300  
+8°30' 3.3  
+5.9 to Peg  
-5.98  
+0.04

1000 Peg

+0.04 300

82°

700

500  
+5°10' 2.05  
-2.77  
+0.09

Bldwood

697.3 Peg

+0.09 100

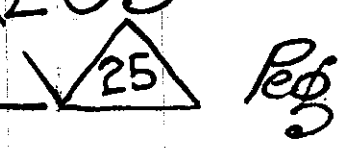
500  
+5°10' 2.05



203.4

200

+4.1 to Cop.  
-0.72





500 - 2.95

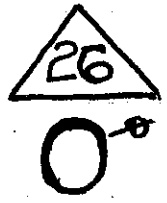
500 - 6'13" - 2.95

60

Bloodwood

497.1 Peg

61



Gum



293°47' 97.5

68°

West Boundary of P.R. 61

△  
2848.7

- 20.72  
+ .03

48.7

±

Wattle

2828

Post △ 26

Iron G 2823, Pin

2800

400  
7°13' - 3.16

Iron bark

RESERVE

+ .03 400

75°

2400

- 17.63  
+ 0.07

400

+ 7°31' - 3.44

Gum

2382.4 Peg

Ridges

61

+ .07 800

300  
- 6°45' 2.01  
+ 31.4 to Peg  
- 31.47  
0.03  
abt 800 3270

3000

500  
- 3°40' 1.0

3000 Peg

+ .03 500

2530

forest

60

74°

2500

500  
- 30°51'  
+ .04  
3.35

Peg 2469.5

+ .04 500

- 6°37'

74°

2000

500  
- 27°21'  
+ .05

Peg 1972.8 abt 500

+ .05 1000

500  
- 8°12' 5.10

thin bedded

Steep Ridges

1500

500  
- 10°17' 8.05

70°

1000

+ 14° to Peg  
- 14°1'  
+ 0.04

1000 Peg

+ .04 1000

500  
- 12°07' 11.15

Thickly

RLY RESTN

ROAD \*

5320'

Rds 69°36'30"  
Seep. 4

Δ  
5355.9

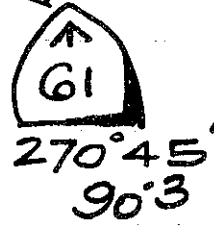
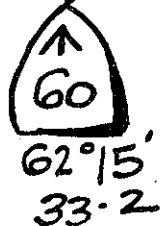
$\frac{-35.9}{+0.04}$



+0.04 355.9

355.9  
-0°55'

Ironbark Iron 5315 Pin Gum



81°

5000

$\frac{-35.99}{+0.12}$

Peg 4964.1

+0.12 1000

500  
-2°10'

↑  
Bloodwood

4500

abt 500 4470

500  
-2°03'

bank

soil

81°

4000

$\frac{-35.45}{+0.11}$

Peg 3964.7

+0.11 1000

200  
-2°10'

Gum

Good brown

Fair grazing

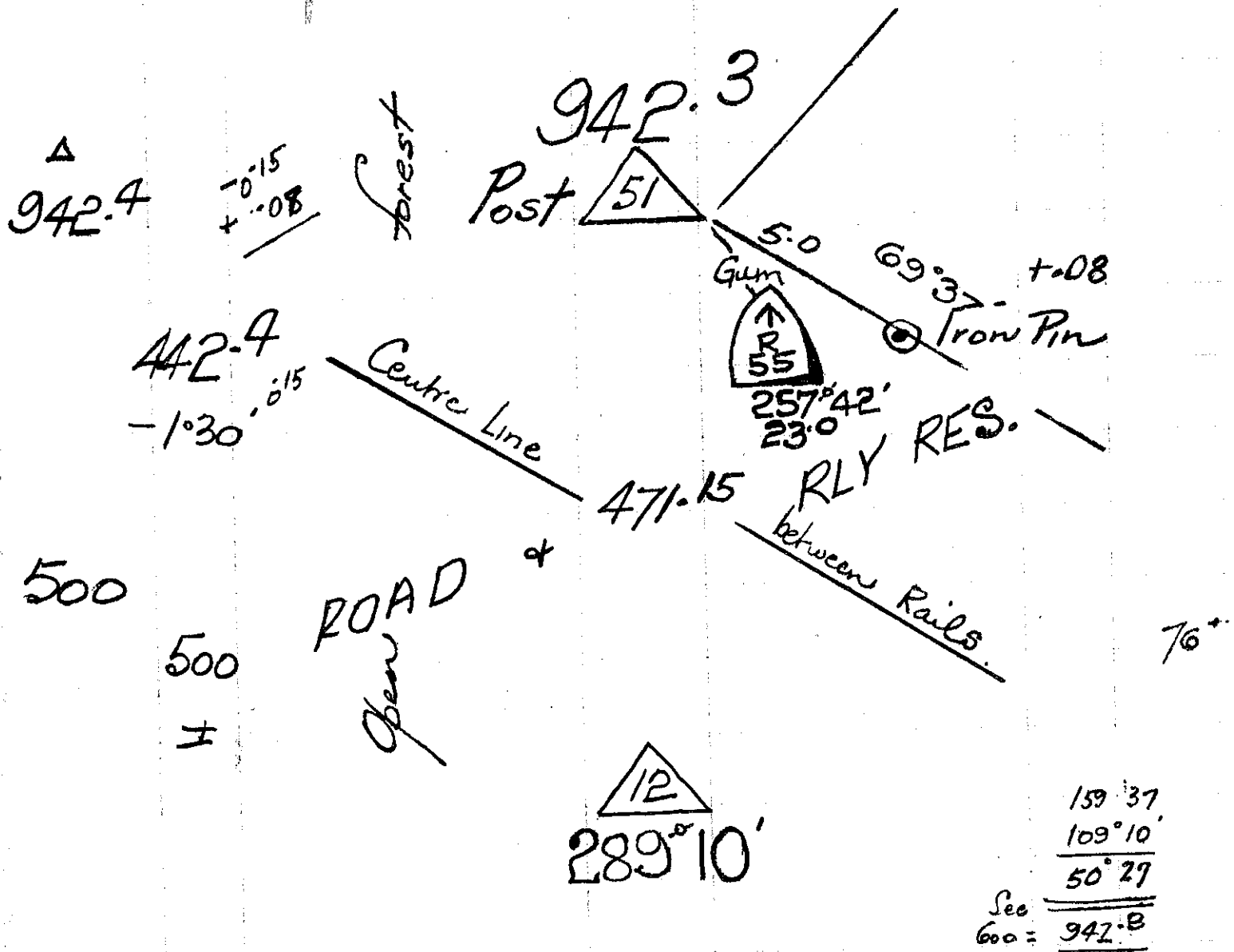
3800

500

en



traverse line to near bank and  
 far bank, i.e. distances are from  
 is the total from traverse line to  
 N.B. Distance shown between Creek banks  
Traverse of Rosedale Cr - down



Road  
 Connection across Rly Reserve and

500<sup>0.17</sup>  
-1.30

CK

ROSEDALE

52  
293

Apple

soil

78°

772.3

0.08  
+0.07



See

160

80

772 3

52

Peg 3

Gum

alluvial

+07

372.3  
-1.10  
0.08

110

70

600

of

loamy

130

70

400

Forest

400

400

±

140

90

200

76°

150

249°37'

100

51

318

Obs Stru.  
C.A.M. Bng. 318

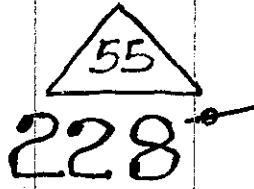
Projected Bndy  
69°37'

(Peg with triblazed tree at corners.)  
far bank respectively

300<sup>0.24</sup>  
-2°20'

15

70



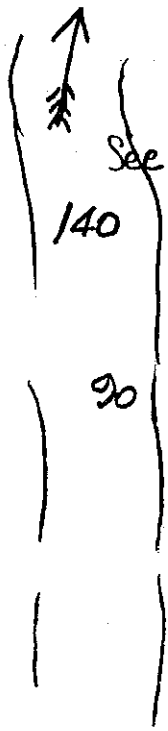
72°



cultivation.

Δ  
434.3

0.34  
0.02



434

70



Peg

+02

434.3

+2°15'

0.34

90

40

200



Apple

54

suitable

flats

70°

907

Apple

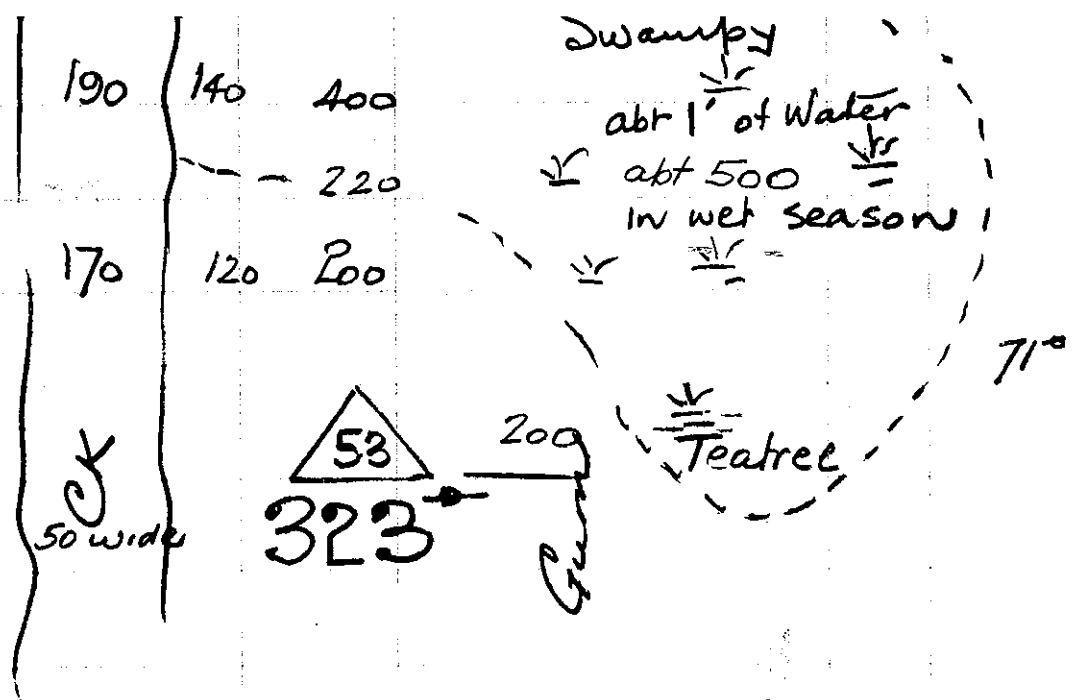
Small



500

500

#



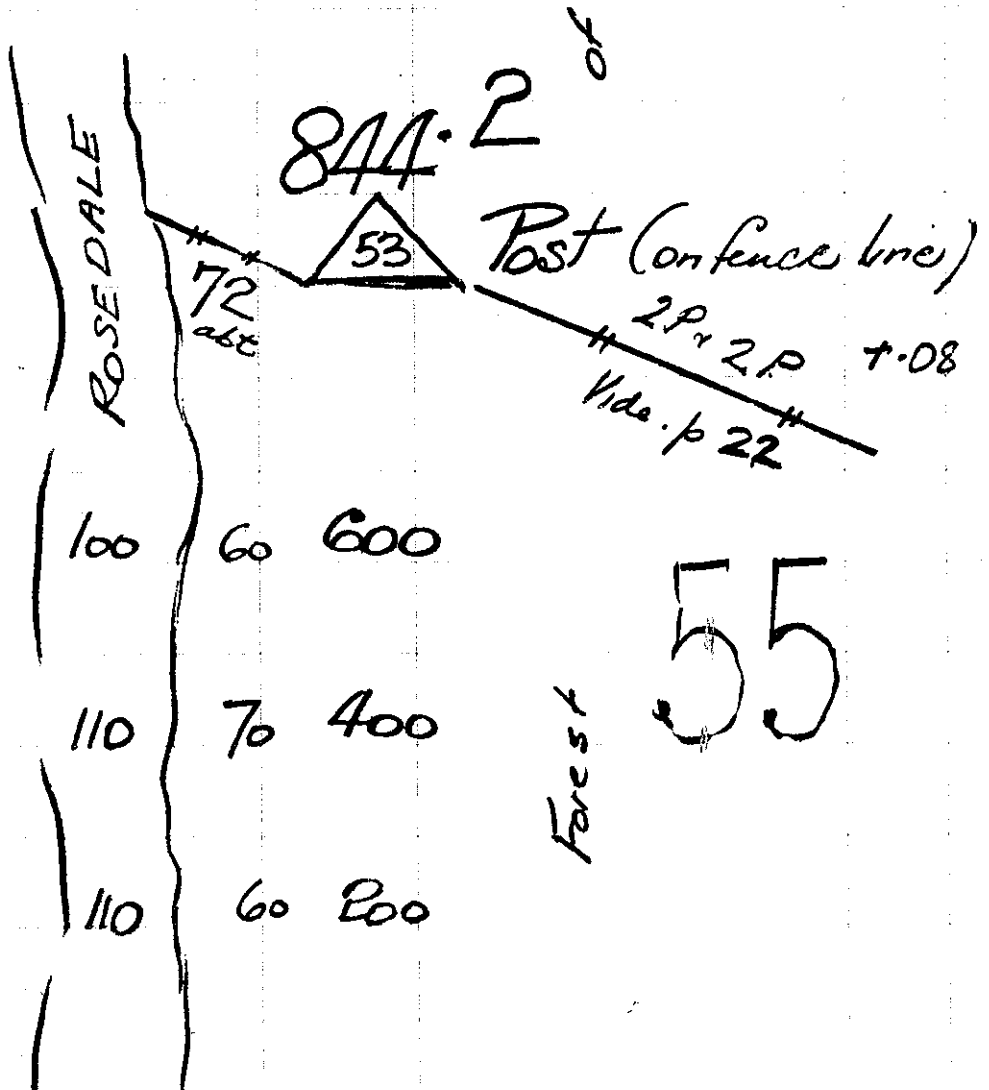
Δ 844.5

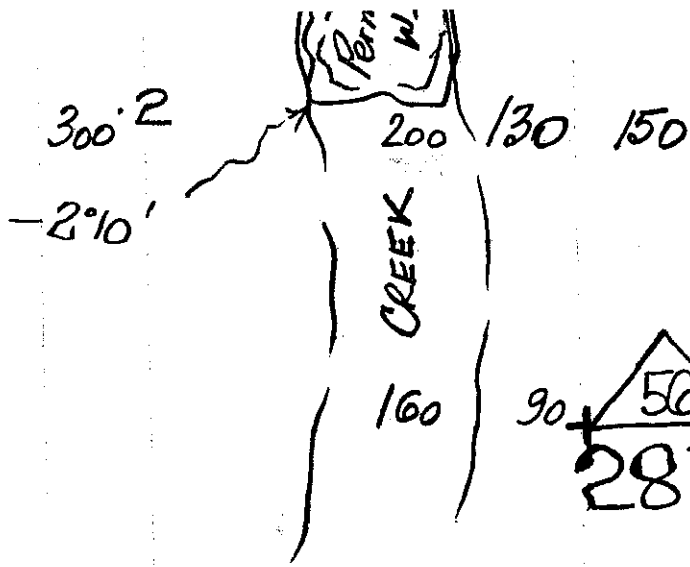
+0.37  
+0.08

344.5

-2°-0'2"

500



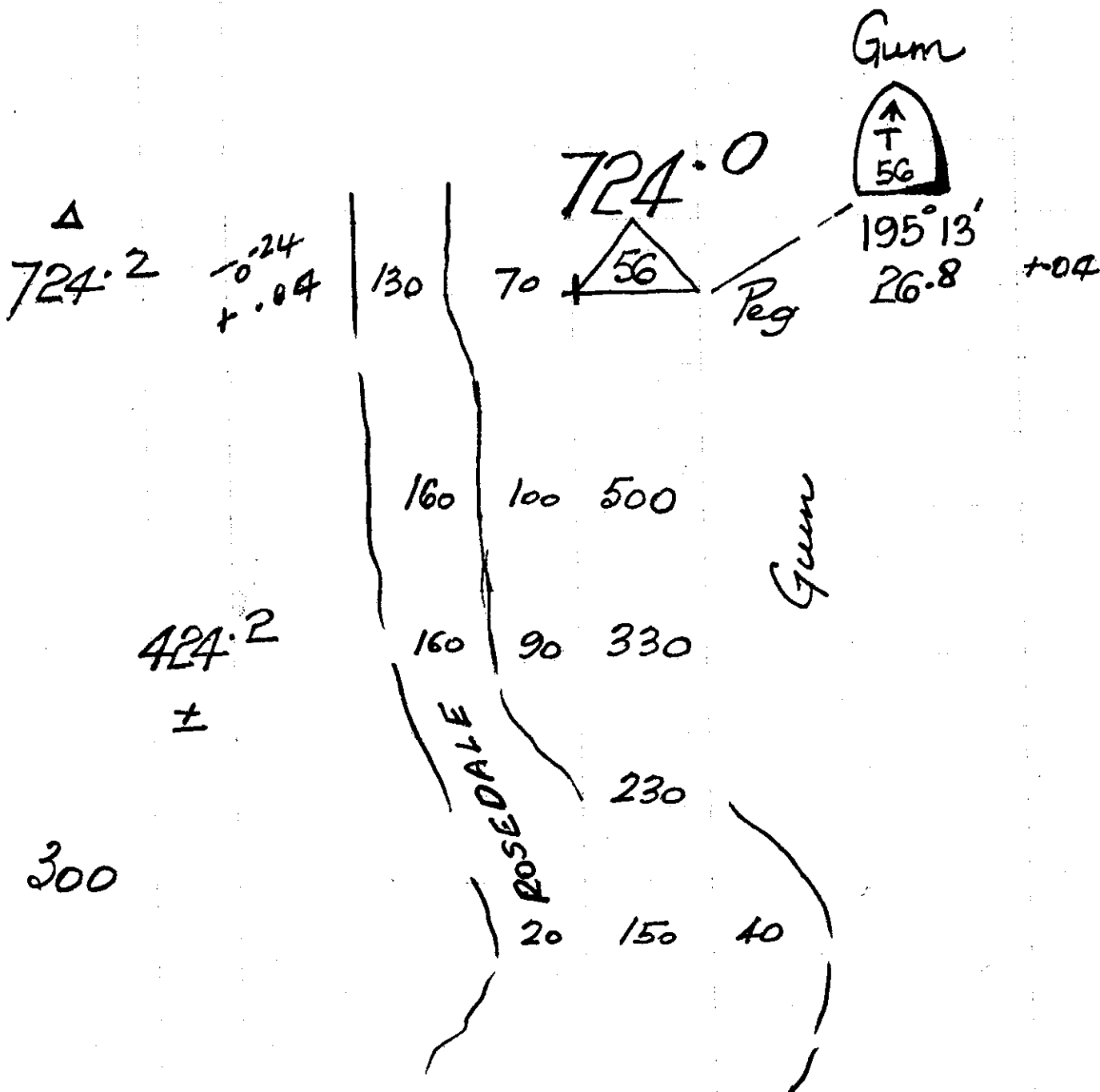


54

72°

Bldwd

loamy



724.0

Gum



Gum

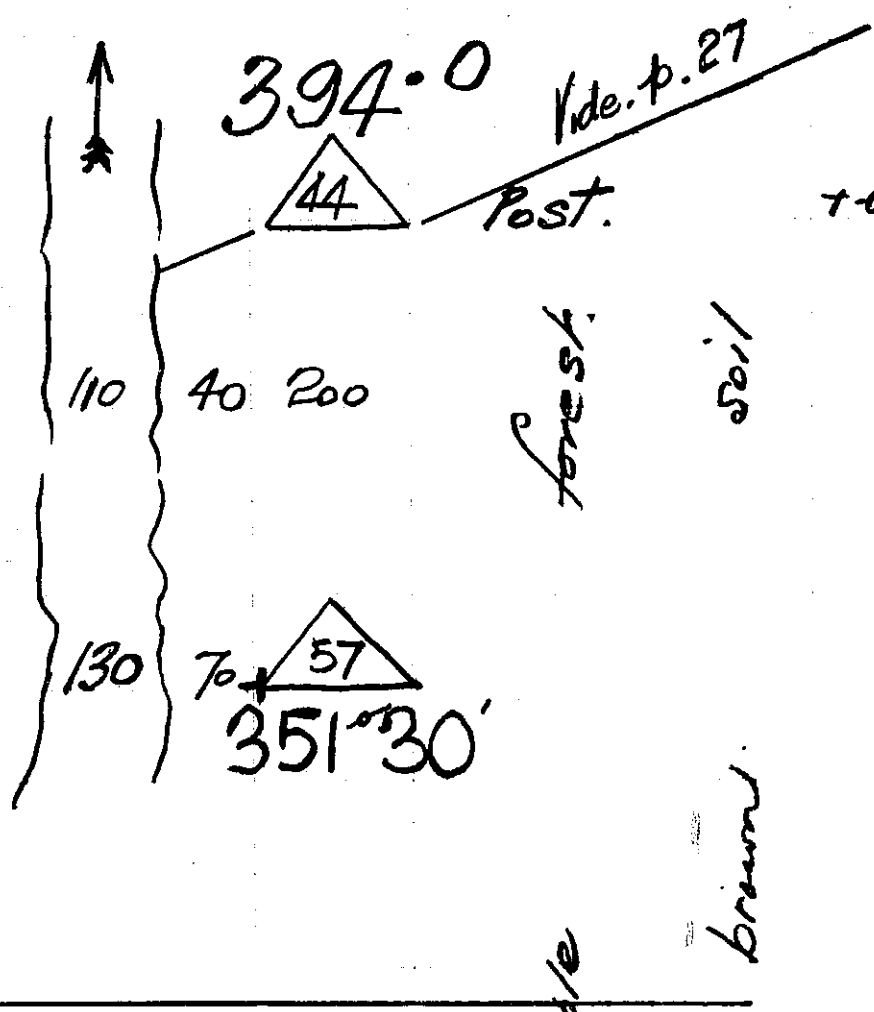


CAMPING RES.

Δ  
394.1

-0.15  
+0.03

394.1  
-1.35  
0.15



Δ  
300.2

-0.21  
+0.02

140

70 +  $\triangle 57$  Peg.

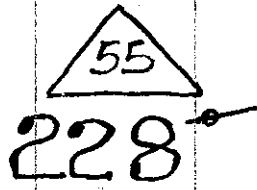
300.

brown  
alluvial

74°  
+0.02

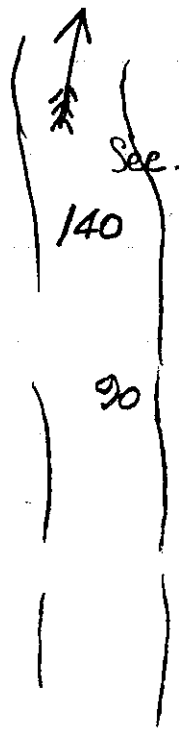
300<sup>0.24</sup>  
-2°20'

70



72°

suitable for cultivation.



434

Δ  
434.3

0.34  
+0.02

140

To



Peg

+0.02

434.3

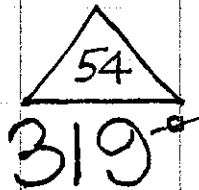
+2°15'

0.34

90

40

200



54

suitable

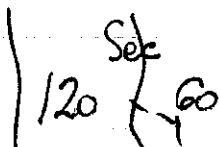
Apple

Flats

70°

Δ  
907

+0.05



907



Peg.

Apple

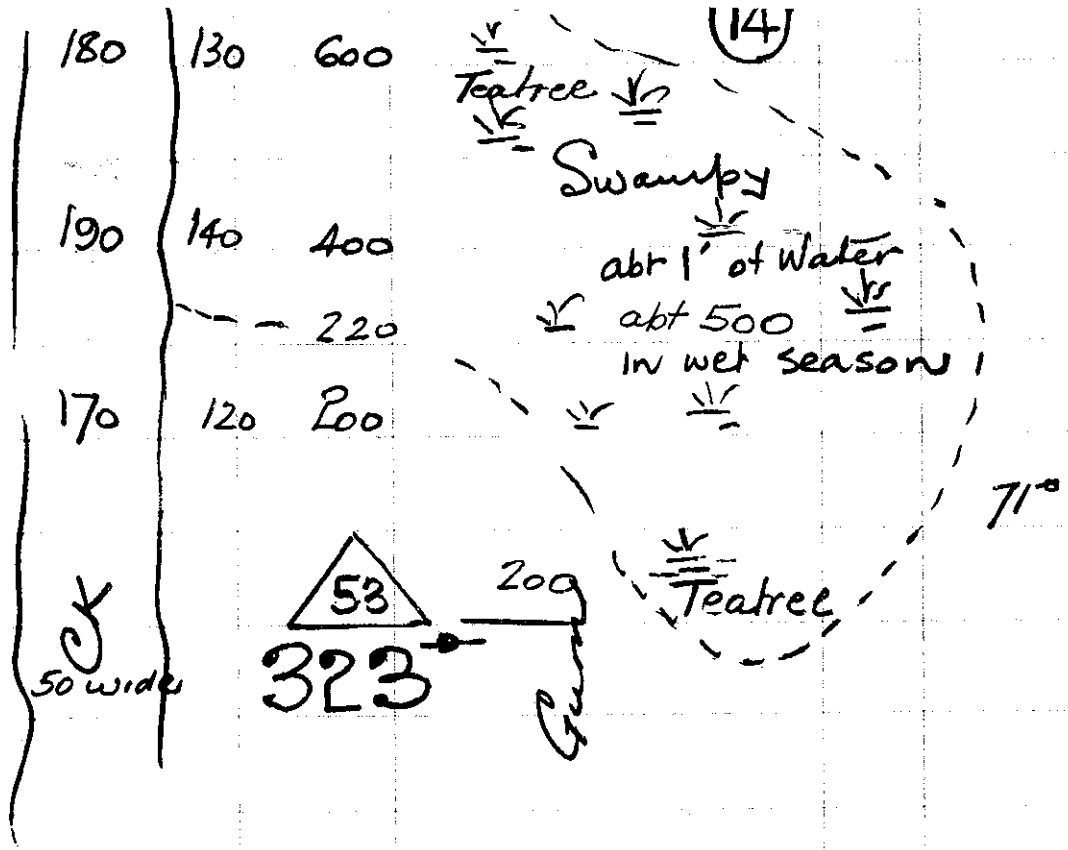
Small



217°35'  
20.2

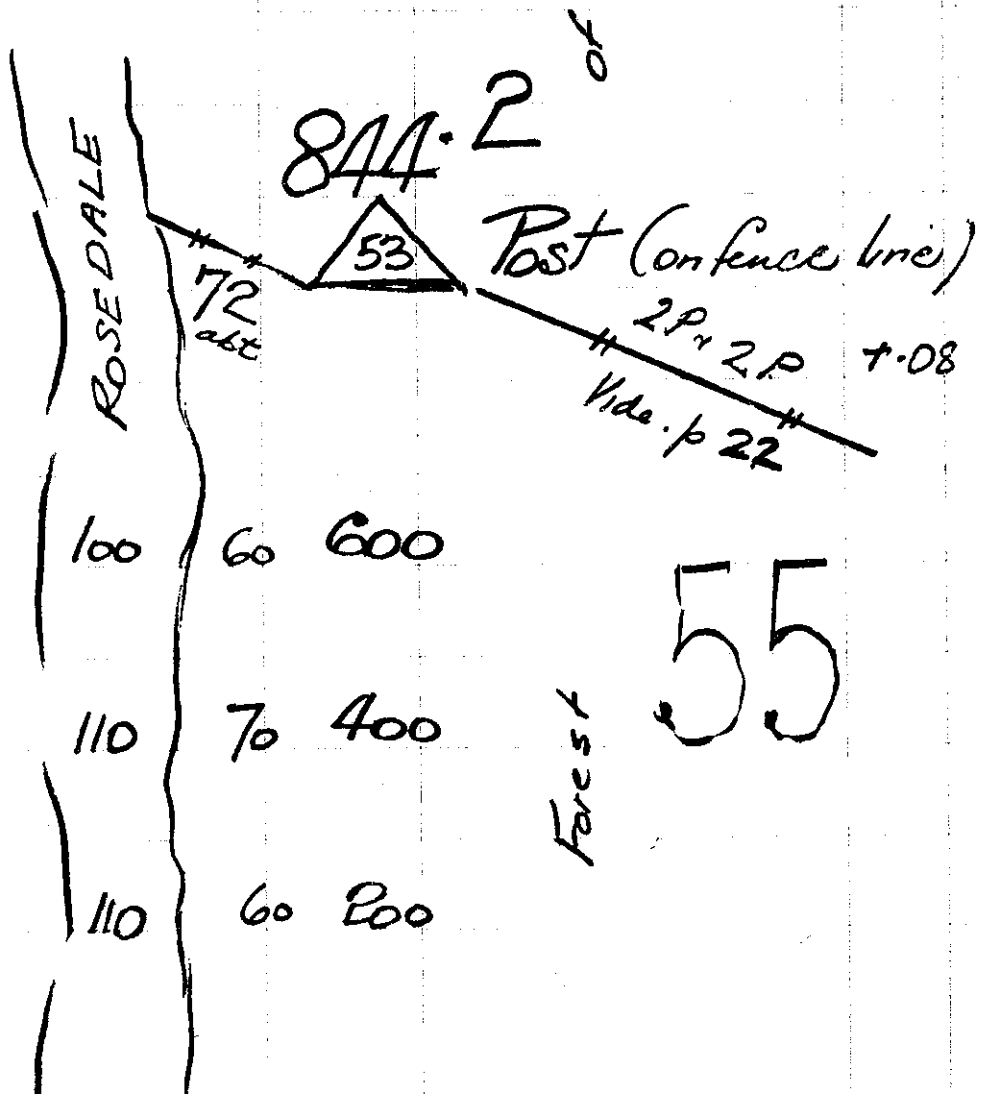
+0.05

407  
±  
500  
500  
±

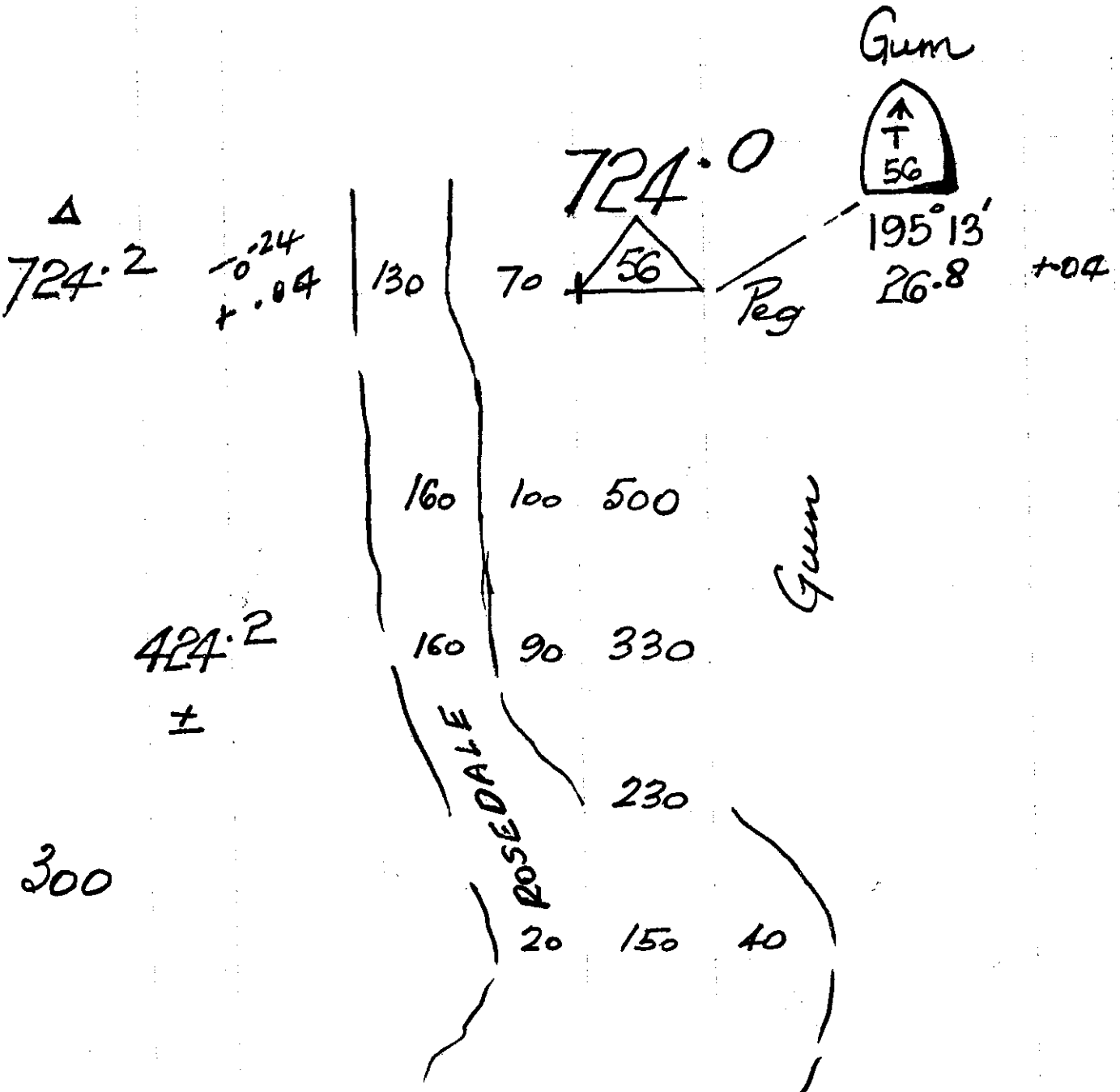
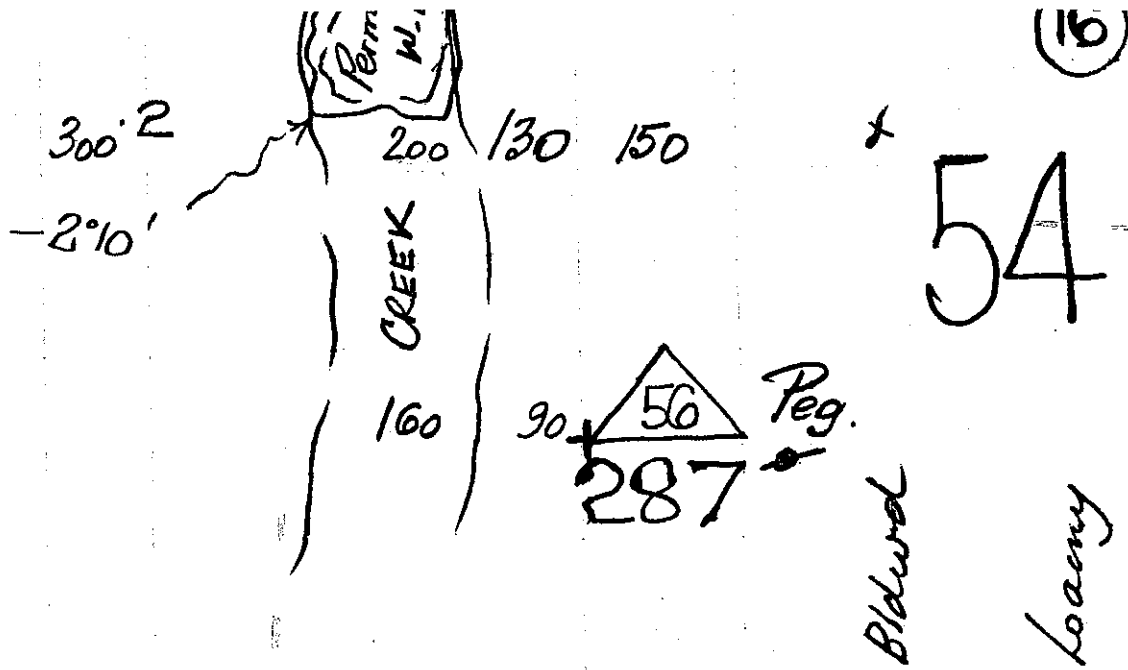


Δ  
844.5  
344.5  
-20-02

0.37  
+0.08



500

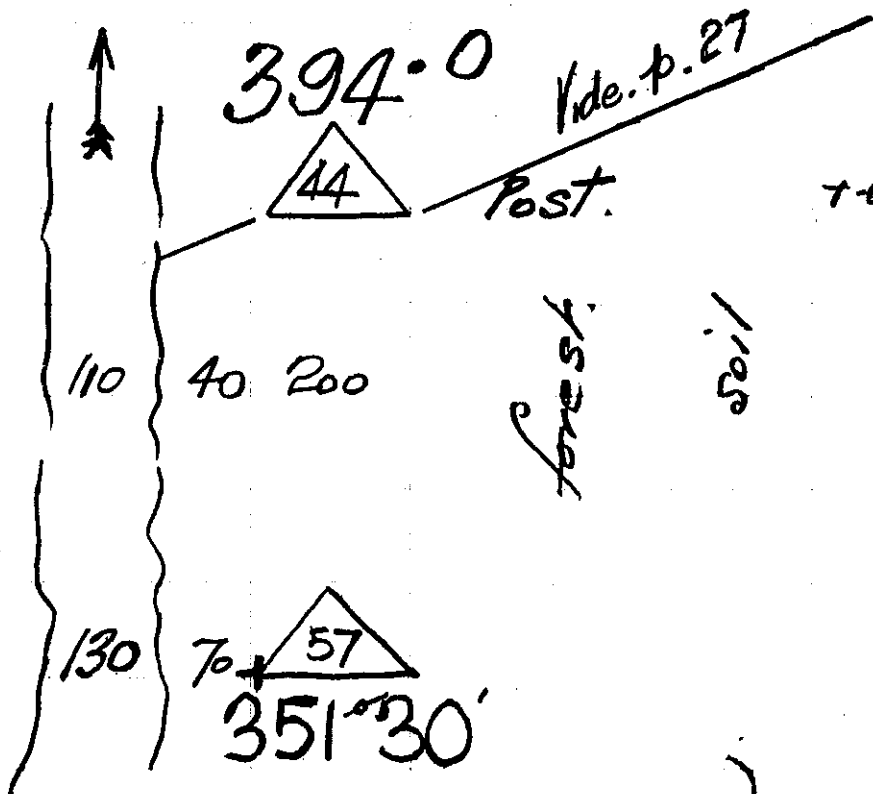


CAMPING RES.

△  
394.1

-0.15  
+0.03

394.1  
-1.35  
0.15



+0.03

74°

△  
300.2

-0.21  
+0.02

140

300.0  
70 57 Peg.

admiral

+0.02

500

594

500

(Level)

500

±

500

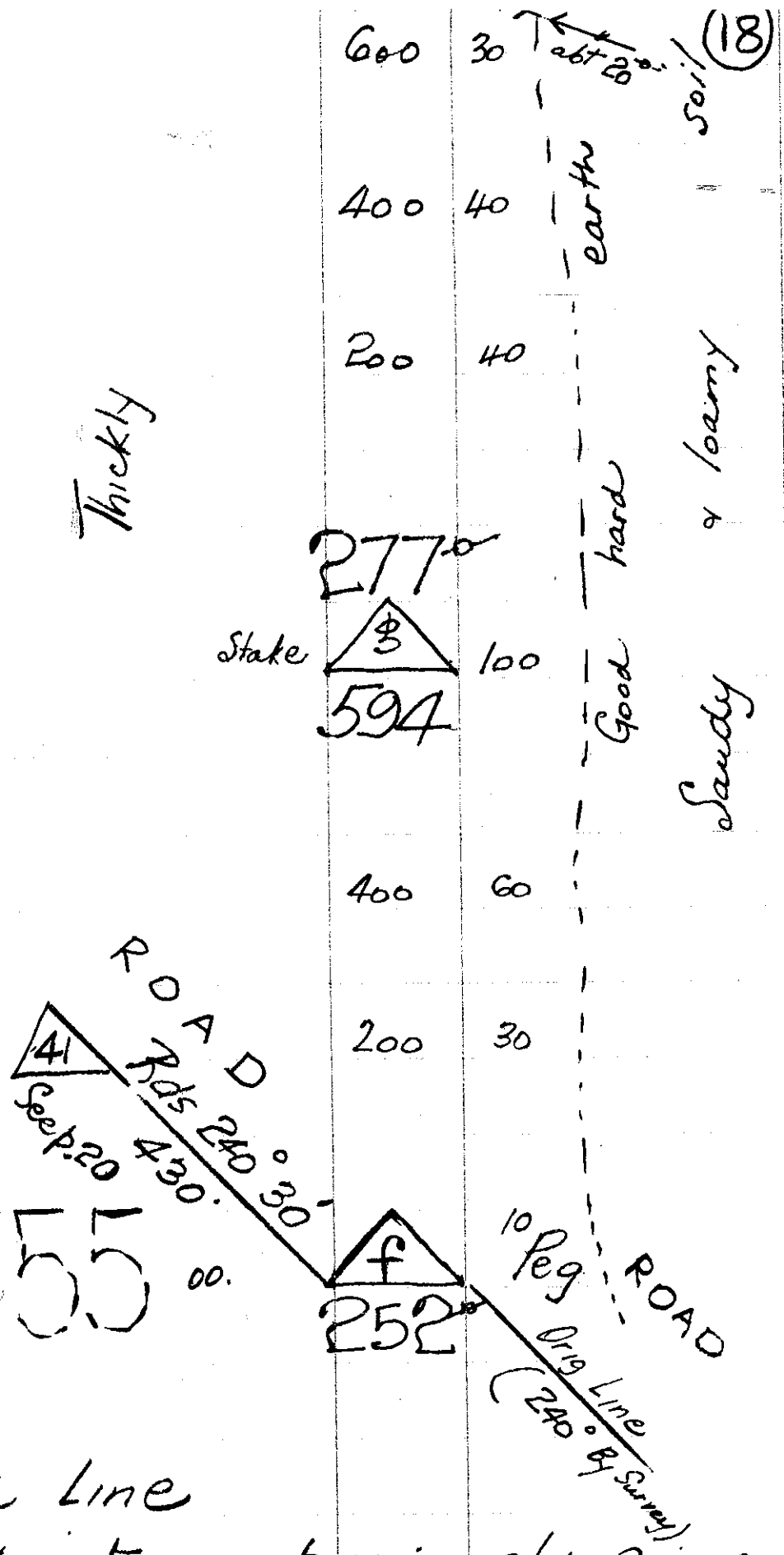
±

94

±

500

±



### Road Line

From point on previously surveyed  
Compass traverse to locate track.

500

±

△  
1040

40

±

1000

500

±

500

500

±

△  
1256.5

256.5

±

1000

Bloodwood

Gum

bank

Timbered

frack

80 200

260°

70



Stake

1040

60

800

30

600

40

400

50

200

269°

50



Stake

1256.5

1000

800

10'

269° 30'  
(80° 30')

269° 15'  
(88° 45')

Easy to undulating

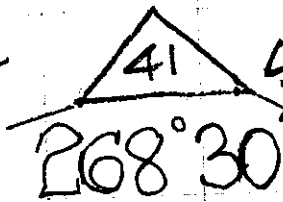
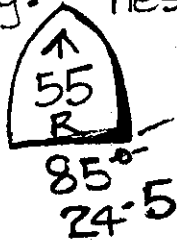
# 2P+2B

500

±

Orig.

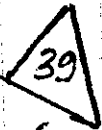
Thick  
Messmate



D.P.

Seef. 18

240  
DATUM 3.0 D.I. Pin



D. Post.  
(undist'd)

Bearing 240°

Datum - previous line 39-41 =  
north of P.R.S. 55 & 54

Continuation of Road Line on

964

Stake



50

Vide p. 25

964

464

±

Thick & heavy Gum & bark

700 30

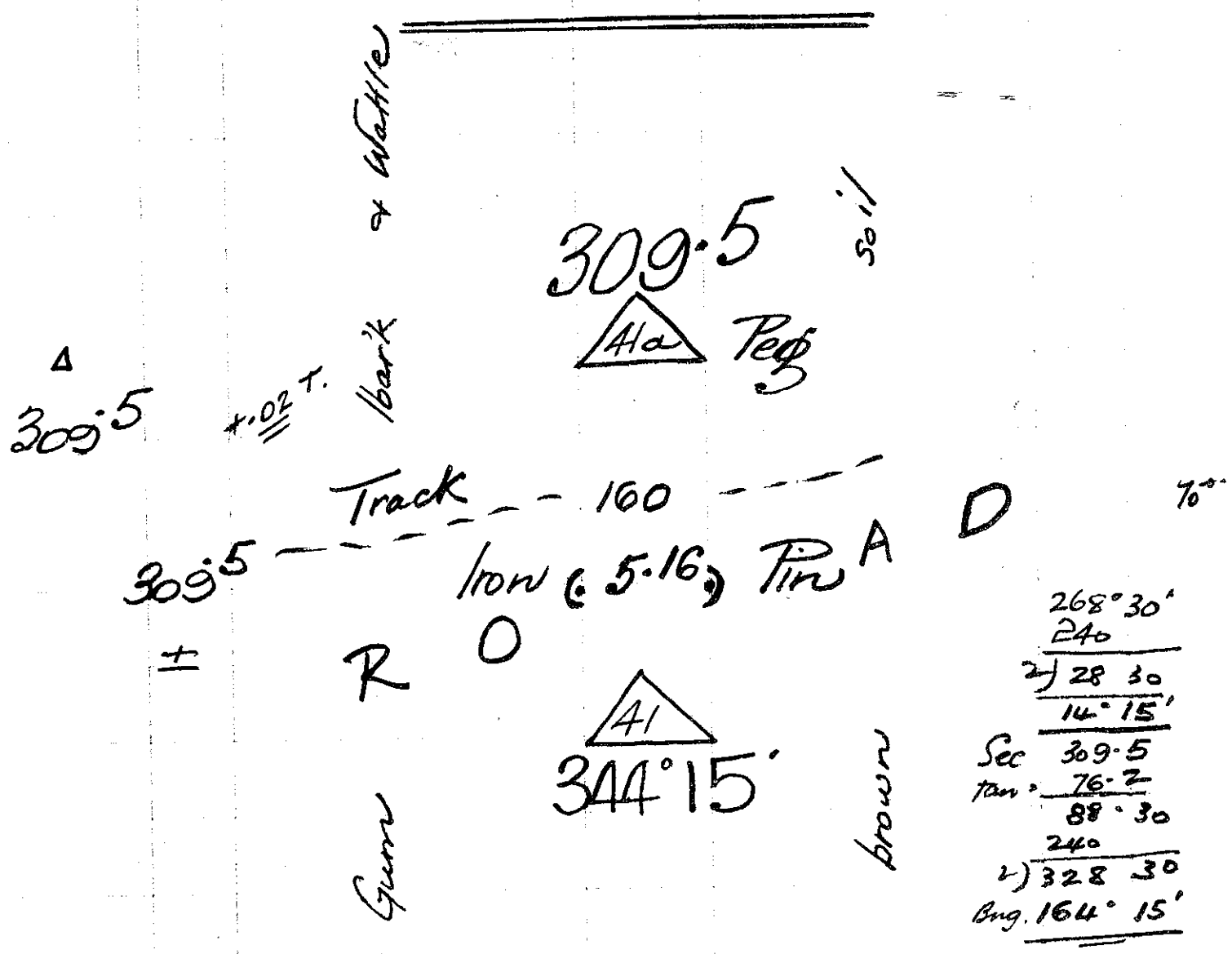
500

40 400

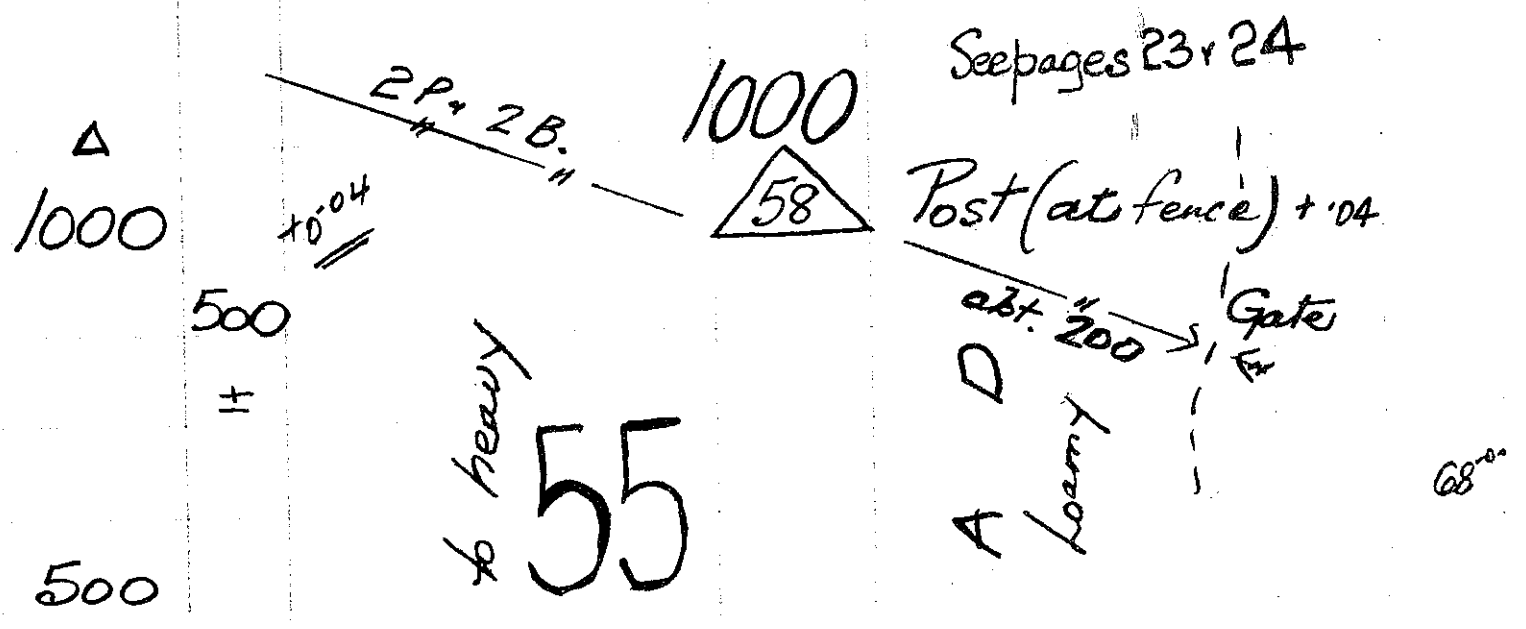
Connection to  
Rd Survey. See p. 24

500





Secant across 3 chain Road.



1500

72°

500  
+ 2'10" .35

Timbers

1000

+ 0.3 to Peg  
- 0.36  
+ .06

Peg

1000 1.15

+ .06

1000

200

+ 1'15" .04

800

Thickly

2 P x 2 B.

560

400

±

Tract  
abt 250

400

150

Gum

400 .32

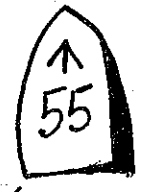


Bldw d.

Iron c

5.0

Pin



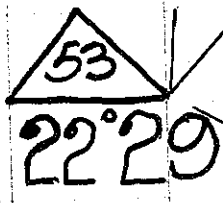
241°10'  
17.2

72°

- 2'15"

47°30'  
40°

Cats



abt 72

Trav. Vide. p. 14

ROSEDALE

CK

Pos. 54 & 55  
Fence line - boundary between

Iron C 3808.17 Pin A

3802.7

Reads 88° 30'  
Seep 21.

R

Post 58

4.4

+08 800

3805.2  
-2.6  
+0.08

305.2  
+2.18



31° 12'  
41.3



320  
27.2

3500

500  
-35  
+2° 12'

22° 14' 20"

501

77'

3000

500  
-2.14  
+0.07  
+1° 25'

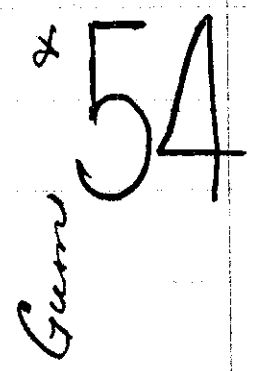
Peg 2997.9 3.5

+07 1800

Iron bark

2500

500  
+0.6  
+2° 45'



74'

2000

500  
+1.45  
+0.06  
+3° 17'

Peg 1998.6 2.3

+06 1000

loamy

1800

(E4) +.07 800

300  
 -2°10' .21  
 +0.64 Peg  
 1500  
 500  
 x 0.69  
 x .10  
 0.3.  
 -1°55'

Ironbark  
 268°30'  
 1.2  
 1.2  
 268°37' 10"  
 Pkt 1.2

1608 Pkt. 268°30'  
 1500 Peg  
 1020  
 brown

1000

500  
 -1°15'

54  
 Gum

268°22'

1010 } Large tree.  
 } Ironbark on Line))

510 Pkt

K

+0.05 500

80°

500

-0°35'  
 +0.06

Peg 499.7

leamy  
 +0.06 500

500  
 +2°09' .35

Heavy

58  
 268°30'

Vide p. 21.

80°

from page (20)  
 Continuing Road Line - produced -

54

1000  
+0.7 to leg.  
-0.7  
+ .04

Peg 1000

+ .04 1000

500  
+ 2.38 .55

or Bloodwood.

(metamorphic origin)

500

500 .15  
+ 1.21

Wattle

Post  $\triangle 42$   
195°

121° 30'  
268° 30'  
2) 390 00  
195°

68°

Along Western Bndy of Por 54

$\triangle$   
2171.1  
-1.18  
+ .05  
371.1  
-8° 35' .038

Gum  
 $\triangle 54$   
348° 40'  
40.6

2170°

$\triangle 42$

321° 45'  
6.24

120  
358° 30'

$\triangle 3$

Iron Pin

200  
Line

Soil

+ .03  
Comp. Trav. 20  
vide p.

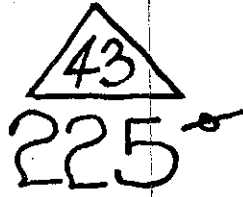
371.

76°

300

300 <sup>0.66</sup>  
-3°46'

Gum + bark



A  
loamy

RESERV.

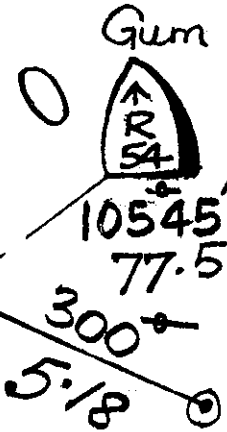
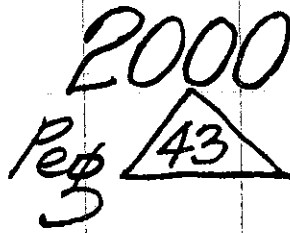
26

73°

Gum



△  
2001.5 -1.56  
+06  
1.5  
±



(Undulating)

Iron Pin

2000  
-500 <sup>0.9</sup>  
-3°25'

5  
4  
Heavily timbered

R  
Brown

CAMPING

1500  
500  
±

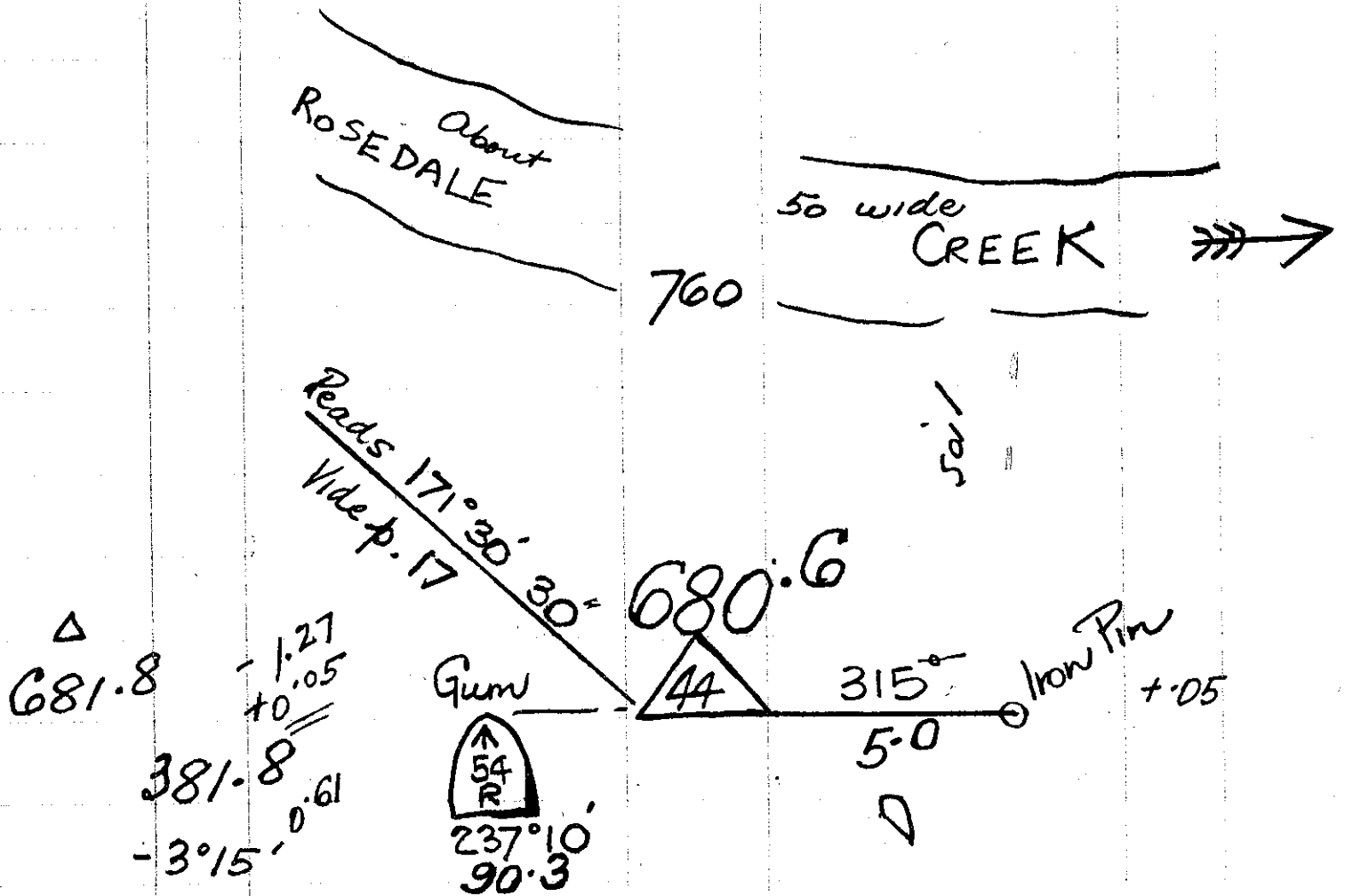
and

71°

Thomas Brown Auth. Surveyor.

and measurements in the field.  
 actual results of my observations  
 notes herein, contained are the  
 This is to certify that the field

Survey Completed Oct. 22<sup>nd</sup> 1955



ALCULATIONS PORTION NO. 54 PARISH OF Tottenham  
 AREA GO A. R. O P.

Stations	Bearing	Distance	North	South	East	West	Multipliers	North Areas	South Areas
-43	45°	680.6	481.3 <sup>2</sup>		481.3		481.3		
-42	15°	2000.	1931.2 <sup>2</sup>		517.6		1480.2		
-58	88° 30'	2170.	56.8	4.2	2169.3		4167.0		
-53	202° 29'	3802.7	3	3513.7		1454.4	4881.8		
-54	323°	907.	724.4			545.9	2881.5		
-55	319°	434.	327.5	6		284.7	2050.9		
-56	228°	724.		484.5		538.0	1228.2		
-57	287°	300.	87.76			286.9	403.3		
-44	351° 30'	394.	389.7			58.2	58.2		
Lat	1.1		<del>3999.3</del>		<del>3168.2</del>	<del>3167.9</del>		61.44374	177.50807
Dep	0.3								61.44374
								2) 116.06433	
								Offsets =	58.03216
									2.25
									60.28

60 a.c.s 1 road.  
 (For Area vide clause 197.)

Thos. Brown  
 Clerk to Surveyor

For computation of Secants. → (SEE BACK)



# Secants

Stns 8-9  
 $264^{\circ} 41'$   
 $270$   
5° 19'  
 Sec =  $150.6$   
 tan =  $14.0$

$5526$   
 $- 14$   


---

  
5512

From Stn 12 across Road

$159^{\circ} 37'$   
 $109^{\circ} 10'$   
50° 27'  
 Sec =  $942.3$   
 $\frac{1}{2} (471.15)$   
 600 wide

Stns 41-41a

$268^{\circ} 30'$   
 $240$   
 $\rightarrow 28^{\circ} 30'$   
14° 15'  
 Sec =  $309.5$   
 tan =  $76.2$   
 Run  $88^{\circ} 30'$   
 $240$   
 $\rightarrow 328 30$   
164° 15'  
 Row Run on Sec =  $5.16$

Iron Pins

$225^{\circ}$   
 $195$   
 $\rightarrow 30^{\circ}$   
15°  
 $45^{\circ}$   
 $195$   
 $\rightarrow 240$   
120°  
 Stn 43  
 $300^{\circ} - 5.18$

Stn 42

$268^{\circ} 30'$   
 $195$   
 $\rightarrow 73 30$   
36° 45'  
 $88^{\circ} 30'$   
 $195$   
 $\rightarrow 283 30$   
141° 45'  
 $321^{\circ} 45' - 6.24$

Stn 58

$358^{\circ} 30'$   
 $22^{\circ} 29'$   
23° 59'  
 Sec =  $5.47$

REGULATIONS

PORTION NO. 61

PARISH OF Tottenham

AREA 160

A. 0 R. 0 P.

ns	Bearing	Distance	North	South	East	West	Multipliers	North Areas	South Areas
0	264°41'	1567.8		145.3		1561.7 <sup>2</sup>	1561.2		
1	257°30'	680.7		147.3		664.8 <sup>1</sup>	3787.1		
2	249°37'	642.		223.6		601.8 <sup>9</sup>	5053.7		
6	180°	5320.		5320.0			5655.6		
24	90°	2828.		19.9	2828.	7.8	2827.8		
9	0°	5836.	5836.0						2) 320°01'016
			5836.	5836.2	2828	2827.5			<u>160.01</u>
	0.2								
	0.5								

*Mrs. Brown.*  
*City Surveyor*