LAND TENURE CENTER
University of Wisconsin - Madison

Consultancy Services to
The Government of the
Republic of Trinidad & Tobago

LAND USE POLICY AND ADMINISTRATION PROJECT (LUPAP)

FINAL REPORT

LAND SURVEYORS RULES
2000

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REPUBLIC OF TRINIDAD AND TOBAGO
The Land Surveyors Rules 2000

RULES

MADE BY THE BOARD UNDER SECTION 41 OF
THE LAND SURVEYORS REGULATIONS 1998

THE LAND SURVEYORS RULES 2000

Arrangement of Rules

PART I
PRELIMINARY

Citation

1 These Rules may be cited as the Land Surveyors Rules, 2000

Interpretation

2 (1) Unless the context otherwise appears the definitions given in section 2 of the Regulations shall apply to these Rules.

(2) In these Rules "the Regulations" means the Land Surveyors Regulations, 1998 made under the Land Surveyors Act No. 33 of 1996;

(3) In these Rules –

"GIS" means Geographical Information System

"Sketch" means a plan or drawing, not necessarily to scale, which shows the relationship of various points of interest.

"UTM" means Universal Transverse Mercator projection

(4) In the event of any inconsistency between these Rules and the Regulations, the Regulations shall prevail

PART II
EXECUTION OF CADASTRAL SURVEYS

Connection to control

3 (1) All cadastral surveys shall be connected to adjoining existing cadastral surveys.

(2) All cadastral surveys that fall within areas designated by the Director of Surveys as being within range of existing control shall be tied to control. These designated areas shall from time to time be listed or delineated on a map and these lists or maps shall be made available at the offices of the Director of Surveys.

(3) All co-ordinates provided on cadastral plans shall be UTM Zone 20 co-ordinates on Naparima 1955 datum. Such co-ordinates shall not be a part of the legal definition of the extent of parcels.

(4) The National GPS Network is based on the International Terrestrial Reference Framework (ITRF), year _____and epoch _____.

(5) The transformation parameters to be used when converting GPS derived positions to Naparima 1955 is _____

(6) The geoid to be used when converting GPS derived heights to TGR or Scarborough is _____

(7) The required accuracy of any geodetic point shall be calculated using the formula: e = a + b.L where a is ____ metres and b is ___ parts per million

(8) A check set of co-ordinates should be supplied with any report, chart or other output, in both ITRF and Naparima 1955 such that it is possible both to verify the correct application of the necessary transformation and the computation of same.

Cadastral Index Map

4 There shall be a digital Cadastral Index Map to be prepared by the Lands and Surveys Division using the digital topographic data and cadastral sheets. The Cadastral Index Map shall be retained at the Lands and Surveys Division. All plans presented for registration shall be compared with this map for positional and graphical accuracy.

Perimeter misclosure

5 The accuracy of cadastral surveys shall be tested by perimeter misclosure, or by comparison with co-ordinated permanent survey marks at the beginning and end of the traverse which shall not exceed the following limits:

(1) On urban surveys, 0.05 metre, plus one part in 8000
(2) On sub-urban surveys, 0.1 metre, plus one part in 5000
(3) On rural surveys, 0.2 metre plus one part in 3000

PART III
IRREGULAR BOUNDARIES

Accuracy of survey

6 When boundaries follow natural features such as streams they shall be surveyed so that the straight line joining adjacent survey points shall not be displaced from the natural boundary by more than 3 millimetres (1/10 inch) on the scale adopted for the plan.

Remote Methods

7 Natural boundaries may be plotted from GIS data, satellite imagery, or by photogrammetric methods, in which case the method shall be stated on the plan.

PART IV
BOUNDARY BEACONS/MONUMENTS

Survey Marks

8 (1) Boundary beacons/monuments shall be hollow steel pipes, 3 cm in diameter and 50cm long. Longer lengths may be used in soft, muddy conditions. In rocky conditions or on concrete areas, drill holes, chiselled marks in stone, concrete or steel, punch marks, or pre-cast bronze discs may be used.

(2) Boundary beacons/monuments shall be capable of withstanding random or accidental interference.

(3) Adjacent boundary beacons/monuments shall be inter-visible wherever possible and:

(a) Boundary beacons/monuments shall be placed at every bend along boundaries

(b) Boundary beacons/monuments shall be placed to identify the boundaries of all parcels of land measured or redefined in the course of a survey.

PART V
REFERENCE AND BOUNDARY LINES

Reference lines

9 Every cadastral survey shall be connected to a reference meridian derived from:

a) two permanent survey marks, or
b) astronomical observations to the Sun or stars, or
c) the meridian of an adjoining survey, or
d) two GPS stations

How the reference meridian was derived shall be stated and the position of every reference meridian shall be shown on the plan.

Boundary lines

10 The bearings of boundary lines shall be expressed as UTM Zone 20 bearings.-

PART VI
UNITS OF MEASUREMENT

Survey Data

11 (1) The bearings of the boundary lines on plans shall be stated in degrees, minutes (and seconds if required) to a precision consistent with the accuracy of the meridian of the survey.

(2) All lengths shall be stated in metres to two (2) decimal places.

(3) Areas shall be shown in square metres with no decimal places; or in hectares to four (4) decimal places.

(4) Co-ordinates shall be stated in metres to two (2) decimal places.

(5) Data copied from a previous survey; deduced; or calculated shall be shown as “copied”, “deduced” or “calculated” as the case may be.

PART VII
CADASTRAL SURVEY PLAN PREPARATION

General

12 (1) Detail such as proper names, the direction of roads, the direction of flow of rivers and streams, book and plan references shall be recorded on survey plans.

(2) The type of permanent mark placed at each station e.g. iron monument, spike, or cross scribed in concrete shall be recorded on survey plans. Temporary marks and pegs need not be identified.

(3) Every plan which forms part of a larger parcel shall show its location within the larger parcel and the access to the public road. If no access is provided there shall be a statement on the plan that the landowner is aware of the situation.

(4) A cadastral sheet section showing the location of the survey shall accompany all surveys.

Materials

13 (1) Every cadastral plan shall be presented for registration on durable material and in black ink.

(2) The cadastral plan shall be produced on legal size material (8 ½" x

14") if the scale allows.

(3) When a plan cannot be produced on legal size material the following sizes shall be used 11" x 17" or 24" x 36"

(4) No plan shall be constructed on material larger than 24" x 36".

Scale of Plans

14 All cadastral plans shall be drawn to a natural scale. Wherever practicable, one of the following scales shall be used:

1:500, 1:1000, 1:1250, 1:5000 or 1:10,000

Data on Plans

15 The following data shall be shown on all cadastral survey plans:

(1) Unique Parcel Reference Numbers (if available)
(2) The cadastral sheet number.
(3) The development or village name.
(4) The county.
(5) The ward.
(6) The Survey Order number, and file number.
(7) The area of the parcel both in numbers and in words.
(8) The bearing and distance of every boundary line, and sufficient data to be able to check closure and the area of the parcel.
(9) The co-ordinates of at least one station on the survey derived from survey observations or the approximate co-ordinates of at least one station on the survey as obtained from topographic data derived from 1994 photography and obtainable at the offices of the Director of Surveys. Whether the co-ordinates are derived from control, or are approximate, must be denoted on the plan. Such co-ordinates are NOT part of the legal definition of parcels.
(10) The names of all known neighbours, or information which may be used to identify the neighbours.
(11) All structures existing on the site. Where the dimensions of a structure are not measured, the approximate position of the structure shall be shown in broken black lines.
(12) The position of all walls fences and drains etc in relation to the boundaries.
(13) All encroachments with the approximate area of the encroachment if possible. This includes overhead and underground encroachments. Encroachments shall be differentiated from the surrounding parcel by the addition of an area symbol
(14) The widths and types of all roads.
(15) The diameter and type of all utility pipelines where the reserves of these affect the allowable use of the land as defined by the planning authority.

(16) All utility poles where these fall within the limits of the parcel being surveyed.
(17) The scale at which the plan is drawn as a representative fraction e.g. 1:2500.
(18) The grid north which in every case shall be at the top of the plan, and if practicable shall be parallel to the side of the sheet.
(19) The date, signature and the seal of the TTLS.

Additional Data on RPO Plans

16 (1) The RPO reference, Volume and Folio numbers.
(2) The Certificate of Title reference Volume and Folio numbers.
(3) The names of original and current title holders.
(4) On RPO plans the following areas should be given in numbers:
i) original grant
ii) 1/20 of grant
iii) previously resumed
iv) area to be resumed
v) area to be acquired
(5) On RPO remaining portion plans all the owners names and Certificate of Title numbers of previously transferred parcels should be shown.
(6) A line labelled "Approved, Director of Surveys" for Director of Surveys signature.

Colours and Symbols

17 (1) AREAS

In keeping with the requirement to scan and record plans in the legal registers, areas shall now remain uncoloured on plans. Area symbols may be used for clarity if required, or if the plan is unusually complex. Copies of the original plan with areas coloured may be provided to assist users of the plan. The following colours may be used on copies of the plan:

Blue – water features
Raw Sienna – areas acquired or to be acquired
Brown – roads of all types
Yellow - areas vested in the State
Pink - other areas surveyed, lands to be resumed and lands acquired by private treaty
Red - bordering lands held under the provisions of the Real Property Ordinance.

(2) LINES

Boundary lined surveyed – solid black lines
Boundary lines not run – dashed black lines

Tie lines – dotted black lines

(3) POINTS (SURVEY STATIONS)
Primary or secondary control stations – black triangle 2-3mm sides
Other control stations and marks placed by a surveyor - black circle 2-3mm in diameter.
Traverse stations - black square 2-3mm sides

Condominiums and townhouses

18 The following plans shall be prepared for all Townhouse Schemes and Condominium schemes:

(1) A location plan which shall record the cadastral data including "common areas" and sufficient measurement to be able to replace all structures

(2) Strata plans for all floors within the condominium scheme

(3) Elevation plans showing each facade view.

PART VIII
REGISTERING OF SURVEYS

Registerng of Surveys

19 The principle to be observed shall be that the surveyor is responsible for his work, although the authorities shall ensure:

(1) That the survey identifies the correct parcel.

(2) That the area of the parcel conforms to the accuracy limits as defined by these rules.

(3) That the regulations and all other legislation have been observed including for RPO the Town and Country Planning final approval for sub-division.

(4) That the plan may be readily incorporated into the state Registers.

(5) That the plan may be readily used for the purpose for which it was prepared.

PART IX
SURVEY RECORDS

Survey records

20 Under sections 37 and 38 of the Land Surveyors Regulations "records"

shall be taken to include at least, those records as defined in this Section IX of the rules

Scope of geodetic survey records

21 The following records shall be kept for all geodetic surveys –

A diagram of the survey. The diagram shall use the symbols and conventions as prescribed in Rule 16 Section (3). The diagram shall show as a minimum –

i) The name, signature and authorised seal of the Registered Surveyor responsible for the work.
ii) The date of first and last observation.
iii) The scale of the diagram.
iv) All control held fixed for the computation.
v) All station numbers and/or names.
vi) All observations used in the final computation.
vii) All new stations determined by the survey.

The following lists shall be produced –

i) Co-ordinates derived by the survey.
ii) Standard errors for all new stations in the survey.
iii) Residuals
iv) Observations taken but excluded from the computation
v) Each new station in the survey shall be described and a sketch prepared. The sketch shall be sufficient to allow the station to be found on the ground.
vi) The standard error of an observation of unit weight

Scope of Engineering survey records

22 The following technical records shall be kept for all engineering surveys

i) The name of the project;
ii) The Client organisation's reference number for the project;
iii) The surveyor's reference number for the project;
iv) The date of commencement of the survey;
v) The date of completion of the survey;
vi) The name, signature and authorised seal of the Registered Land Surveyor (Engineering Surveying) responsible for the work;
vii) Purpose for which the survey may be used;
viii) All correspondence and specification sheets passed between the client organisation and the surveyor;
ix) All site notes, print-outs of collected data, unedited plot(s), final plot(s);
x) Control (plan and height) stations used;
xi) Location sketches and descriptions of plan & height control used in the survey shall be prepared. The sketch shall be sufficient to allow the control positions to be easily identified

on the ground.

xii) Standard List for the project (Appendix A to the Land Surveyors Code of Best Practice 2000 for Engineering Surveying);

xiii) Despatch notes;

For the purposes of the Land Survey Act 1996 a Registered Land Surveyor (engineering surveying) shall on request of the Director of Surveys:
allow inspection of all records used in the collection of the data;
supply copies of engineering surveying records;
Supply data on a suitable medium e.g. CD, Disk, film or paper.

Scope of Photogrammetric survey records

23 The following technical records shall be kept for all photogrammetric surveys

(1) A record of the survey. The record shall use the symbols and conventions as time to time prescribed by the Director of Surveys. The diagram shall show as a minimum –

i) the name, signature and authorised seal of the Registered Land Surveyor responsible for the work;
ii) Project information;
iii) Project designation – name & reference;
iv) Purpose for which the survey may be used;
v) Products – film/orthophotographs/scanned data etc;
vi) Primary client;
vii) Proposed/estimated or actual start & completion date of capture of photography;
viii) film type;
ix) focal length of camera;
x) Data type if any, e.g. GEO-TIFF;
xi) the flight index diagram with film and exposure numbers, at an appropriate scale to overlay with topographic detail;
xii) instrument calibration details e.g. camera, scanner, plotter;
xiii) location diagram of all survey control.

(2) The following lists shall be produced –

i) control co-ordinates;
ii) residuals of final aerial triangulation computation;
iii) residuals of individual model Absolute Orientation parameters.

(3) Location sketches and descriptions of plan & height control used in the survey shall be prepared. The sketch shall be sufficient to allow the control positions to be easily identified on the ground.

For the purposes of the Land Survey Act 1996 a Registered Land Surveyor

(Photogrammetric surveying) shall on request of the Director of Surveys:

i) allow inspection of all records used in the collection of the data;
ii) supply copies of aerial survey records;
iii) supply copies of the images/photographs/data in the form of diapositive, film image, contact print or copy thereof;
iv) Supply data on a suitable medium e.g. CD,DVD, DLT, Disk, Tape or other medium.

Confidentiallity of Supply of material or information

24 The supply of any material or information to the Director of Surveys under section 51(4) of the Land Surveyors Regulations shall not in any way breach the confidentiality of a clients information, copyright therein or professional code of ethics of the person supplying them or of any other owner of such copyright.

PART X
REFERENCE DOCUMENTS

Reference Document

25 (1) Engineering Surveys shall be carried out by reference to the Land Surveyors Code of Best Practice for Engineering Survey – March 2000.

(2) Hydrographic Surveys shall be carried out by reference to the IHO standards for Hydrographic Surveys Special Publication No 44 (4th Edition, April 1998).

(3) Photogrammetric surveys shall conform with Internationally accepted standards for aerial survey specifications which shall at least be the equivalent of the standards identified in the series of FIG Specifications as here defined:

(a) Vertical Aerial Photography and Derived Digital Imagery – Client Specification Guidelines (1st Edition, April 2000)
(b) Specification for Mapping at Scales between 1:1000 and 1:10000 (2nd Edition 1988)
(c) Surveys of Land, Buildings and Utility Services at Scales of 1:500 and Larger – Client Specification Guidelines (2nd Edition 1996)

Dated ## day of ######## 2000.

T D LEONG
Chairman,
Land Survey Board of Trinidad and Tobago