



Digital Plan Submission Guidelines for ePlans

Asset Information & Mapping – Land produces the base mapping for the City of Calgary. Our main base map products are the Legal Survey Fabric and the Ownership Parcel Fabric. This data is distributed to the entire Corporation as well as external utility companies, emergency services and SPIN II in various formats.

To construct these maps, Asset Information & Mapping – Land inputs surveyors' plans at three stages of the land development cycle: Tentative Plan Stage, Linen (Approved Tentative) stage and Registered stage. Asset Information & Mapping – Land receives the first two stages from the Alberta Land Surveyors via the subdivision application process. The Registered plans are received directly from the Land Titles Office.

The following are guidelines to ensure that the survey plans will be accepted in the subdivision application process. Please refer to the links below:

<http://www.servicealberta.ca/1075.cfm>

http://www.servicealberta.ca/pdf/ltmanual/Geo-referencing_Requirements.pdf

- All plans submitted must be to LTO Standards for legal plan submission (see page 2) and AutoCAD 2004 format. In particular, it is critical that all elements are on the proper layers. No layers are to be frozen or turned off. If the information on the plan doesn't fall under a category then it is placed on layer 34.
- All plans must be geo-referenced in 3TM format.
- Scale factor must be included in the title block.
- Dimensions must match line work and all dimensions must be included on plan.
- Plans should have acceptable closure.
- Developer information name should be indicated on the plan for every submission.
- No more than one plan per drawing. Example: page 1 and 2 of a Section 47 plan should be 2 different drawings.
- At Tentative submission we only require the subdivision plan.
- At Linen (Approved Tentative) stage we require all associated plans with the same CPC number to be submitted together. Example: Subdivision, Overland Drainage, ROW, Utility, Access Plans etc.

For Your Information

Infrastructure & Information Services will supply surveyors with a copy of the Legal Survey Fabric without charge provided you agree to the licensing conditions. Please see the contact information below.

Contact for ePlan Digital Submission Information: **Call 311**

**Asset Information & Mapping - Land
Infrastructure & Information Services
Corporate Services
The City of Calgary**

Email: CM_EplanSubmission_Queries@calgary.ca

GEO-REFERENCING REQUIREMENTS FOR PLANS OF SURVEY:

In addition to current LTO & Public Land requirements for digital CAD file submissions, the practitioner must provide sufficient information such that the CAD file can be referenced into the NAD83 reference frame.

Geo-referencing is accomplished by identifying a reference point on the plan and providing geo-referenced coordinates for that point. The CAD file must contain one point identified and geo-referenced to the NAD83 Original or CSRS datum. The CAD file can be submitted on either a GRID plane or at GROUND.

In addition, the following information must be shown and also recorded in the DIPS and DDIPS applications:

- The prescribed symbol and unique text identifier must be used to show the location of the reference point in the CAD file (see filing specifications). The symbol and text must be shown in the main body of the plan and appear in the image/plot file which becomes the registered plan at LTO.

- 3TM or UTM coordinates for the reference point and the appropriate central meridian must be identified. Datum used, either NAD83(Original) or NAD83(CSRS). The combined scale factor used to scale the shown ground distances
to the mapping plane.
- A statement on the origin of bearings: Grid, derived from GNSS observations, or Grid, derived from the line between ASCM____ and ASCM____,
or
 - Assumed from Plan _____. If the bearings are assumed from a plan, then the corresponding grid bearing for the reference line must be shown in the legend or
 - Grid derived from published ATS coordinates from _____ to _____. State the ATS points used; for example: NE 1-05-13-4 to E 12-05-13-4.

FREQUENTLY ASKED QUESTIONS:

1. *What is the genesis for this requirement?*

It has been a requirement to submit CAD files to LTO for over 10 years and to Public Lands for 4 years. These files have enabled the mapping bases for the Province to be maintained in a timely and cost-effective manner.

However, most CAD files are not “spatial”. Most often they are based on local or assumed coordinates (for example: [0.0, 0.0] or [10,000.0, 10,000.0]). If correct / absolute or real-world coordinates are not used, the CAD file cannot be viewed in its correct geographic location and requires manual adjustments to translate it to its correct spatial location. This extra processing reduces or diminishes the value of the CAD file. If the CAD file is submitted with at least one point in the file at the correct spatial location, the various approving authorities can view the contents relative to the provincial mapping base in a more timely fashion.

2. *At what date will LTO and Public Lands refuse to register plans where the CAD file is not geo-referenced in accordance with the new standard?*

As of **January 1, 2010**, plans submitted for registration at LTO or for approval at Public Lands that are not geo-referenced in accordance with the new standard will not be accepted for registration.

3. *How will the geo-referencing requirement change the way I draft survey plans for filing at Public Lands and for registration at the Land Titles Office?*

Those plans with the CAD file prepared on a GRID plane will need to comply with the Geo-Referencing requirements: one georeferenced point identified on the plan with symbol and

text, 3TM or UTM coordinates for the reference point, Datum used, either NAD83(Original) or NAD83(CSRS) The combined factor used to scale ground distances to the

mapping plane. A statement on the origin of the bearings.

For those plans prepared with the CAD file on the GROUND plane:

In addition to the requirements noted above for CAD files prepared on a GRID plane, the CAD file can be drafted or prepared exactly the way it has been to date. When it is finished, the CAD file should be translated to the geo-referenced point (coordinates) and

then rotated to the appropriate GRID bearing derived from an ASCM or ATS point or according to the bearings derived from GNSS observations.

4. *Can I use GROUND distances to prepare my CAD file?*

GROUND distances are the governing values pertaining to that survey; these are the annotated values that are shown (and registered) on the plan. This, of course, will not change.

Many surveyors currently prepare their CAD drawings using GROUND distances; less effort will be required by Surveyors if they choose to continue this practice. This new requirement will give surveyors a choice in preparing and submitting their CAD file: GROUND or GRID distances can be used; as long as it is noted in the DIPS metadata file.

5. *How do I orientate the CAD file and what bearings do I show on the face of the survey plan?*

The CAD file must be orientated (rotated) to match the grid bearings derived from either: Ties to survey control or GNSS observations or ATS V4.1 coordinates.

The bearings shown on the face of the survey plan and the tif image will still be the same bearings that would have been used previously; i.e. oriented using an assumed bearing from another plan or from ties to survey control or from the Alberta Township System.

6. *How do I show or indicate the bearings and orientation that I am using?*

There must be a statement in the Legend indicating the origin of bearings as: Grid, derived from GNSS observations, or Grid, derived from the line between ASCM_____ and ASCM _____,

or

Assumed from Plan _____. If the bearings are assumed from a plan, the corresponding grid bearing must be shown in the legend, or

Grid derived from published ATS coordinates from _____ to _____. State the ATS points used; for example: NE 1-05-13-4 to E 12-0513-4

Examples: "Bearings are 3TM NAD83; derived from line between ASCM 1234 and ASCM 3865 and are referred to 114 degree West Longitude."

or

"Bearings are UTM NAD83; derived from GNS observations at ASCM 3865 and are referred to 117 degree West Longitude."

or

"Bearings are UTM NAD83; derived from ATS V4.1 coordinates from NE 1-05-13-W4 to E 12-05-13-W4."

7. Is there a preference between 3TM or UTM projection for the CAD file?

Use of the 3TM or UTM projection for the CAD file is dependent on whether the survey falls within an Urban Cadastral Map Area or a Rural Cadastral Map Area. Presently LTO plan bearings are referred to 3TM in the case of an Urban Mapping Area, and UTM in the case of a Rural Mapping Area. To assist in determining which area your survey falls in, please see

http://www.srd.gov.ab.ca/lands/directorsurveys/pubforms/fact_Sheet_10.p df.

8. Which Combined Scale Factor (CSF) should we indicate in the CAD file?

The CSF should be derived from one of the following:

- i.) The preference is to use a CSF for a point in the middle of the survey
- or ii.) For the geo-referenced point indicated in the legend or
- iii.) Other manner prescribed by the Alberta Land Surveyor.

9. What is the difference between NAD83 (Original) and NAD83(CSRS)?

With satellite positioning, the NAD83 datum has been adjusted to be more accurate. NAD83(Original) and NAD83(CSRS) are based on the same reference ellipsoid; however, NAD83(Original) is offset approximately 2m from the geo-center. NAD83 (CSRS) is an updated, more accurate, three-dimensional realization of the NAD83 reference system taking advantaged of improved GNSS positioning.

10. Can I use NAD83 (CSRS) coordinates?

Yes, CSRS is a more accurate determination of the NAD83 datum (see question above).

11. Are all the ASCMs available in either the NAD83 (original) or NAD83 (CSRS) datum?

NAD83 (Original) coordinates are available for all ASCMs with published coordinates. Coordinates referenced to the NAD83 (CSRS) datum are only published for those ASCMs that make up the NAD83 (CSRS) subset. For more information on the CSRS subset go to:

<http://www.srd.gov.ab.ca/lands/directorsurveys/ascmsubsetdata.aspx>

12. Why should we use “observed” rather than “published” coordinates?

Published coordinates for survey control markers reflect adjustments (and distortions) that have been applied to the network. Especially through the use of GNSS, modern surveys may be more accurate than the local control network. By using observed coordinates, the true location of the survey is used and any discrepancy with the published coordinates can be investigated and fixed. If you must use published coordinates for the location of the reference point, NAD83 (CSRS) coordinates are more accurate, and thus preferable.

13. Will there be changes in the information required for the DIPS or DDIPS files submitted with a LTO plan or a Public Lands Plan?

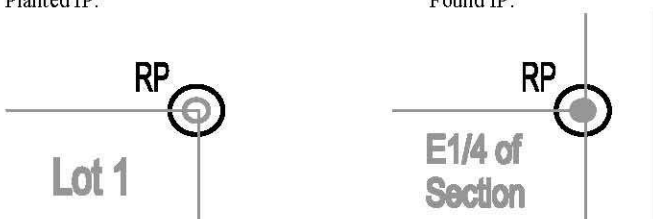
Yes, minor changes will be made to both the DIPS and DDIPS web application to reflect the geo-referencing requirements. If the appropriate web-based DIPS or DDIPS is not used, the plan will be rejected.

14. Can other practitioners acquire the CAD files submitted to LTO or Public Lands?

No, the CAD files are used only by LTO, Public Lands and SDW/AltaLIS and only for the purpose for which they were submitted, i.e. the approval and registration process and for mapping the new survey. They are not released or available to any other party.

GEO-REFERENCING SPECIFICATIONS

LAND TITLES SUBMISSIONS:

LTO LAYER/LEVEL SPECIFICATION DESCRIPTION	LAYER
Type Of Survey, Condominium Drawing Title(Floor Plan or Cross Section) and Location (Section, Township, Range, Meridian)	1
Scale Bar And Scale Text	2
Legend and North Arrow	3
ALS Affidavit, Surveyors name and Registration Number, (John Smith A.L.S. Registration Number 1234) and Owners Name	4
Map Sheet Border, Company Name And File Number	5
Linework and Text for Local Authority Approvals, LTO Approvals and Condominium Corporation Address	6
Subdivision/RW Plan Area (Area To be Registered)	7
Outline / Inline Area To Be Registered	8
Property And RW Linework Outside Area To Be Registered	9
Text For Linework Outside Area To Be Registered (bearings, distances, lot and block numbers, etc.)	10
Phantomized Linework For Superseded Plans and Phantomized Lot, Block and Plan Numbers	11
MASCOT Number and Symbol and ASCM tie linework and text; lines may be broken for plot purpose, not to scale	12
Symbols (IP Planted, IP Fd., Drill Holes, Etc.) and associated text	13
Dimension Arrows and Lines	14
Street Name, Lane, Road Allowance and WalkWay Text	15
Condominium Unit Factors Table, Individual Lot and Parcel Areas, Certificate of Title Number in Lot/Parcel	16
Section, Block Lines, Unbroken Within Area To be Registered	17
Section, Lot, Block Lines up to Survey Post Within Area to be registered (trimmed linework)	18
Lot/Condo Unit Numbers Within Area To Be Registered	19
Block Numbers Within Area To Be Registered	20
Registered Plan Number, (generally blank, number added after registration)	21
Line Bearings, Distances, Lot Dimensions, Arc, Radius, Chord Info B and E of Curve, Delta (Text) within area to be Reg. and associated lead lines, arrowheads and dimension linework	22
Street And Lane Widths Within Area To Be Registered	23
Lot Lines Unbroken Within Area To Be Registered ; including Bareland Condominium Unit Boundary	24
ASCM Symbols and text identifier at true coordinates or to scale	25
Right-Of-Way Plan - Dimensions And Distances include assoc. lead lines, arrowheads and dimension linework within area to be Reg.	26
Right-Of-Way Dashed Line, (generally used on Subdivision plans) for new R/W plans	27
Right Of Way Linework, intersecting/unbroken At IP Symbols for new R/W plans	28
Right Of Way Descriptor (e.g. Utility R/W)	29
Lot Line And Text In Hydrology - Within Hydrology	30
Section, Block Line In Hydrology, Block Nos., Dimension Within Hydrology	31
Hydrographic Features Linework and Feature Names	32
Location/Place Name (City, Town, County, Municipal District)	33
Misc. Information	34
<p>Geo-Reference Point (RP) Symbol and Text. The entire drawing should be moved to the georeferenced point. The point is to be identified by a symbol. The centre of the symbol must have the correct absolute coordinates. The symbol consists of a concentric circle around the appropriate (planted or found) IP symbol. Place the "RP" text next to RP symbol. See examples below:</p> <p>Planted IP: Found IP:</p> 	35*

*Updated June 2, 2009

Layer Specification for Digital Disposition Submissions

Layer / Level	Feature
9	Property, R/W and Adjacent Dispositions Contains the linework of adjacent existing property, r/w and surface activities/dispositions as indicated per content requirements for that disposition. Typically outside area of interest. ATS (section) linework broken for plot purposes.
10	Text Contains the text for adjacent surface activities / dispositions, property and r/w. Leaders and arrows are acceptable.
17	ATS (Section) Linework not to be broken and must be topologically clean. ATS linework must be completed for the entirety of all 1/4 sections affected by the surface activity. There must not be any text element on this layer/level.
28	Disposition boundary This linework shows the limits/boundaries of the disposition. In the case of an MSL and LOC on the same plan, the linework is not to be duplicated. This linework must be topologically clean, no duplicated linework and no dangles or undershoots. There must not be any text element on this layer/level.
35*	Geo-Reference Point (RP) Symbol and Text. The point must be identified by a symbol. The centre of the symbol must have the correct absolute coordinates. The symbol consists of a concentric circle around the appropriate (planted or found) IP symbol. Place the "RP" text next to RP symbol. Examples: Planted IP: Found IP:
40	Surface Activity Code Text ie: MSL, PLA (not required to display on plot or image file). Insertion point must fall within the limits of the disposition in each Crown parcel or ATS land. There must be text elements on this layer/level.

*Updated June 2, 2009



THE CITY OF
CALGARY
INFRASTRUCTURE &
INFORMATION SERVICES

June 16, 2010

NOTICE

Re: Plan Submissions

In an effort to reduce the high volume of submissions being rejected we are publishing this advisory to provide clearer direction for E-plans submissions.

Effective immediately, all submissions through E-plans Submissions must be in AutoCAD 2004 format. This will allow us to map your plans into the Legal Survey Fabric (LSF). **Please note: Your submission will be rejected if, for any reason, we can not open the .dwg file.**

We understand that the industry must change to keep pace with client's growing demands and we endeavor to keep up with these demands. Until we can implement our changes in software applications to current software we respectfully ask all to comply with this request.

Please use the attached Guidelines and LTO Layer/Level Specifications to ensure your submission is processed.

Please direct all inquiries / questions about submissions or rejections of ePlans to 3-1-1

Regards,

Asset Information & Mapping - Land
Infrastructure & Information Services
Corporate Services
The City of Calgary