


Guidelines for Preparing a Survey Plan Dataset

The purpose of these guidelines is to help land surveyors and their employee delegates more reliably deliver develop and submit survey plan datasets to aid in the timely and accurate maintenance of the ParcelMap BC fabric.

 **NOTE:** These guidelines have been prepared in support of [Practice Bulletin No. 3: Surveyor General's Requirements for the Submission of a Survey Plan Dataset to Support ParcelMap BC](#) ("requirements").

A Survey Plan Dataset consists of three (3) components:

1. **[Survey Data CAD File](#)**
All spatial information that defines the Survey Plan (i.e. lines, arcs, annotations, natural boundaries etc.), as required by the Specifications.
2. **[Survey Data Control Point File](#)**
All control points shown on the Survey Plan, including Government Control Points (GCMs) listed in MASCOT and geo-referenced points derived by or referenced in the survey.
3. **Survey Plan Metadata Submission Web Form** (provided by Customer Portal)
Additional data that describes the Survey Plan (i.e. Survey Date, Plan Type, etc.), but is not addressed in these guidelines.

OPTIMIZING THE SURVEY DATA CAD FILE

A CAD drawing file (in the .dwg CAD file format) that correctly expresses the real-world dimensions of the survey, as shown by the official plan of record, must be included.

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Drawing Format Requirements

- **Individual CAD files are required for each new plan.**
For example, a new subdivision and a new easement cannot be submitted as one SPDS even if the plans are to be submitted to the registry concurrently.
- Each CAD file should **only include (on ParcelMap BC layers) the boundaries that are explicitly shown on the official plan of record.**
For an easement plan, this requirement means that the boundaries of the underlying subdivision parcels should only be included if they are required to locate the boundaries of the easement relative to the subdivision parcels.
- **All** surveyed lines shown on the official plan of record should be placed on one of the PMBC layers. This includes all resolved or retraced boundaries even if they are not the subject of the plan (see instructions for [PMBC RESOLVED LINES](#) layer, below)
- All entities in the CAD file (e.g. lines, arcs, polylines, text, blocks, etc.) **must be 2 dimensional** (i.e. all Z values = 0).

- Do not use special CAD objects (e.g. Civil3d Alignments, Profiles, Corridors, Grading Lines, etc.) on PMBC layers. Convert them to simple lines, arcs and/or 2-D polylines instead. All line work in the CAD file (including non-PMBC layers) should be:
 - Scaled to UTM grid distances using the Combined Scale Factor listed in the official plan of record. Inversed distances in the CAD file must be grid distances, not ground distances
 - Shifted (translated) to the UTM NAD83 CSRS coordinates of the provided control points
 - Rotated (if required) to ensure that inversed bearings in the CAD file are UTM grid bearings
 - For [Explanatory Plans](#), see the section on Special Plan Types for instructions on how to approximately georeference, scale, and rotate the plan to align with the Parcel Fabric
- While it is **not necessary to define an explicit projection** in the CAD file, if your software requires a projection to be defined for a drawing, ensure it is set to the correct UTM zone (and datum) for the survey.

ParcelMap BC (PMBC) Layer Requirements

- There are **nine (9) required PMBC layers**. The names, content, and specifications for these layers are described in [Table 1](#).
- **All PMBC layers must be included** in the CAD file, even if they are empty (i.e. no data is included).
- **PMBC layers must be named exactly as specified** below– all upper case (i.e. no lower case or mixed case, and no spaces).
- The layer colour, linetype, lineweight and other **symbols used in the PMBC layers does not have to follow any particular specification** and is entirely at the discretion of the surveyor. Mixed linetypes, line weights, and line colours can all be used within a PMBC layer.

- PMBC required data, linework, text, etc must be separated out into different layers according to the instructions in Table (2). Other entities in the CAD file that are not part of the PMBC requirements can be left on non-PMBC layers or placed on the PMBC_OTHER layer.

Table 1 – ParcelMap BC (PMBC) Layers

- [PMBC SURVEY LIMITS](#)
- [PMBC PARCEL LINE](#)
- [PMBC INTEREST LINE](#)
- [PMBC DESIGNATION](#)
- [PMBC TIE LINE](#)
- [PMBC ROAD NAME](#)
- [PMBC RESOLVED LINES](#)
- [PMBC DIM](#)
- [PMBC OTHER](#)

Layer Name:	PMBC_SURVEY_LIMITS
CAD Entity Type:	2-D Closed Polyline
Purpose:	A single, self-intersecting, closed polyline feature surrounding the total extent of the survey shown on the plan
Guidelines:	<ul style="list-style-type: none"> • Does not need to coincide with line work on other layers (it can be 'free hand'). • Surrounds the lands surveyed including resolved boundaries not directly part of the subject parcels. • Include ties to control that are within a reasonable distance survey (i.e. that could be plotted on an official plan of record without foreshortening). • Polyline must be drawn as a closed shape without gaps. • The 'Closed/Unclosed' flag in the .dwg file must be explicitly set as 'Closed'. • This entity is not to be shown (plotted) on the official plan of record (.pdf).

Layer Name:	PMBC_PARCEL_LINE
CAD Entity Type:	Lines, Arcs, 2-D Polylines
Purpose:	Reserved for boundaries of the subject parcels of a plan (not including plans of easements, statutory right-of-ways, or other interests or charges)
Guidelines:	<ul style="list-style-type: none"> • Typically, limited to the <i>area within the heavy black outline</i> shown on the plan. As a general rule of thumb, lines belonging to the PMBC_PARCEL_LINE layer would be plotted with a solid linetype (not dashed) on the official plan of record. • Typically includes the heavy black outline itself. • Note that different instructions apply to Air Space Plans, Building Strata Plans, and Posting Plans; see section on Special Plan Types • Should include any natural boundaries, including interior natural boundaries such as creeks or ponds that bisect, or boundaries that are completely contained within the parcel. • Surveyed (linear) boundaries should be composed of 2-point lines and arcs (simple curves). <i>Polylines should only be used to represent natural boundaries</i> • Do not include boundaries of parcels that are to be cancelled as a result of the plan (e.g. boundaries of consolidated lots). • Do not include interest parcel (easement, right of way, covenant or lease) boundaries, including pre-existing interests within the heavy outline.

Layer Name:	PMBC_INTEREST_LINE
CAD Entity Type:	Lines, Arcs, 2-D Polylines
Purpose:	Reserved for boundaries of the subject parcels of an easement, covenant, lease or statutory right-of-way plan.
Guidelines:	<ul style="list-style-type: none"> • Similar to PMBC PARCEL LINE, but limited to <i>new</i> interests, SRWs, or charges on title. • Typically, limited to the area within the heavy black outline shown on the plan. As a general rule of thumb, lines belonging to the PMBC_INTEREST_LINE layer would be plotted with a solid linetype (not dashed) on the official plan of record. • Typically includes the heavy black outline itself as well as any internal divisions between different Areas. • Note that different instructions apply to Volumetric Interests and Building Leases; see section on Special Plan Types • Do not include the boundaries of pre-existing interests not defined by the subject plan (these should be placed on the PMBC_RESOLVED_LINES layer) • Surveyed (linear) boundaries should be composed of 2-point lines and arcs (simple curves). <i>Polylines should only be used to represent natural boundaries.</i> • Do not include radial lines at the beginning and end of curves.

Layer Name:	PMBC_DESIGNATION
CAD Entity Type:	Singleline or Multiline Text; Leaderlines
Purpose:	A text label uniquely describing a parcel within the plan.
Guidelines:	<ul style="list-style-type: none"> • For recorded survey parcels: the lot, district lot or block number. • For dedications or other non-recorded parcels: the label given this area of land in the plan (e.g. <i>Dedicated as Road, Dedicated as Park, Return to Crown or Common Property</i>).

	<ul style="list-style-type: none"> • For plans of easements, rights of way covenants, and other interests: text uniquely identifying an area of land (e.g. "Easement Area 1", "Easement Area 2", etc.) • Do not include road names or water body names (use PMBC_ROAD_NAME layer for this instead).
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Layer Name:	PMBC_TIE_LINE
CAD Entity Type:	Lines, Arcs
Purpose:	Surveyed measurements that do not form part of the linear boundary of a survey parcel or interest.
Guidelines:	<ul style="list-style-type: none"> • Includes most entities <i>typically plotted with a dashed line type</i> on the official plan of record. • Should be limited to ties to control, traverse lines, baselines used to define the location of a natural boundary, or connections across roads. • Do not include interest lines or cancelled parcel lines. • <i>If any portion of a surveyed line follows a surveyed boundary</i>, place it on the PMBC_RESOLVED_LINES layer, not the PMBC_TIE_LINE layer. • Must be full length (not foreshortened). • Should be continuous (do not break the lines where they cross other boundary lines or tie line) • Should be 2-point lines, not polylines. • Do not include radial lines at the beginning and end of curves. • Do not include ties to witness posts unless they are necessary to connect the survey to control.

Layer Name:	PMBC_ROAD_NAME
CAD Entity Type:	Text
Purpose:	Road name, lane, road allowance and walk way text.
Guidelines:	<ul style="list-style-type: none"> This information can be provided as single line text or multi-line text.

Layer Name:	PMBC_RESOLVED_LINES
CAD Entity Type:	Lines, Arcs
Purpose:	Additional retraced or resolved parcel boundary lines that are not part of the subject parcels of a plan.
Guidelines:	<ul style="list-style-type: none"> Typically, limited to <i>area outside the heavy black outline</i> shown on the plan or for boundaries of lots in a Posting Plan. Also used for cancelled parcel lines (as for boundaries of consolidated lots) or the boundaries of pre-existing interests. Do not use for ties to offset witness posts, control, or traverse lines. Do not include radial lines at the beginning and end of curves. Must be full length (not foreshortened). If any portion of a surveyed line follows a surveyed boundary, place it on the PMBC_RESOLVED_LINES layer (not the PMBC TIE LINE layer).

Layer Name:	PMBC_DIM
CAD Entity Type:	Single-line text (not multiline)
Purpose:	Dimension labels (i.e. distances, bearings and arc lengths) and associated leader lines.
Guidelines:	<ul style="list-style-type: none"> • Used by the automatic bearing and distance check function during SPDS submission. • Can be expressed in either grid or ground units, but you must specify which is used within the SPDS submission dialog. • Information on this layer that is within a block entity or is an object label will not be processed.

Layer Name:	PMBC_OTHER
CAD Entity Type:	Any
Purpose:	This optional layer can include any other CAD entities that the land surveyor considers useful in the plan.
Guidelines:	<ul style="list-style-type: none"> • Includes 'Scenery' such as lines, arcs, 2-D polylines of surrounding parcels not directly retraced or resolved by the current survey. • Also includes supplementary text (single line or multi-line) to help explain the plan.

Ensuring Plan Integrity

- The linework on PMBC layers in the CAD file **should directly correspond to the labeled dimensions shown on the official plan of record**. If you inverse between the endpoints of a line in the CAD file, you should get the bearing and distance labeled in the plan (corrected for Combined Scale Factor and/or astronomic to grid bearing convergence angle).
- Surveyed lines, arcs, and natural boundary polylines should be **broken into individual segments wherever they intersect** with another surveyed boundary. This does not include tie lines (on the PMBC_TIE_LINE layer) which are expected to cross other lines and boundaries without being broken. Surveyed boundary lines should also not be broken where they intersect unsurveyed 'scenery' lines on the PMBC_OTHER layer.
- **All lines, curves and polylines on PMBC layers should 'snap' to each other perfectly**, with no overshoots (lines that cross over each other) nor gaps (lines that do not quite meet at the parcel corner).
- If linework in the official plan of record has been 'clipped' to the outline of a placed survey post symbol (i.e. in order to 'mask' them), ensure that the lines have been extended to their true intersection in the PMBC layers.
- **Always use polylines to represent natural boundaries** in a plan; never use them for surveyed (linear) boundaries.
- **Do not exaggerate or foreshorten lines** included in PMBC layers – as specified above, all lines should be shown at their true length and bearing in UTM grid units.
- **All linework included on PMBC layers should be at the same scale** – do not include details at a different scale than the main drawing.
- **Do not include overlapping or duplicate lines** – there should only be one line connecting any two point locations on PMBC layers
- Ties to **witness posts that are offset from the actual parcel boundary do not need to be included** unless they are necessary to connect the parcels to control (deleting short tie lines to offset witness posts is recommended but not required).

- Dimensions for witness posts that fall on parcel boundaries are not required. The goal of ParcelMap BC is to represent the location of true parcel corners, not the location of physical survey monuments that reference those parcel corners (merging linework to include witness distances in the total line length is recommended but not required).
- **Radial lines at the beginning and end of curve are not required.**

Instructions for Special Plan Types

Please reference Practice Bulletin No 3: [Surveyor General's Requirements for the Submission of a Survey Plan Dataset to Support ParcelMap BC.](#)

- [Explanatory Plans](#)
- [Posting Plans](#)
- [Building Strata Plans](#)
- [Air Space, Volumetric Space and Building Lease Plans](#)
- [External References](#)
- [Plans Prepared in Grid distances \(ABCLS Exemption under GSIR 3-4\(1\)\(h\)\)](#)

Explanatory Plans

The georeferencing requirements for survey plan dataset (SPDS) submissions for Explanatory plans are outlined in Section 5(b) of Practice Bulletin No 3: [Surveyor General's Requirements for the Submission of a Survey Plan Dataset to Support ParcelMap BC.](#)

- If the Explanatory plan is prepared as part of a larger survey that has been georeferenced according to the instructions in Parts 2-6 of the [GSIR](#), use the same georeferencing applied in that survey.
 - The SPDS for the Explanatory plan should only include (on PMBC Layers) the parcel or interest lines specific to the subject parcels of the Explanatory plan, along with resolved lines necessary to tie the subject parcel to the underlying georeferenced parcels. It is not necessary to include all the parcel lines from the underlying survey.
- If the plan is being approximately georeferenced from the ParcelMap BC Fabric:
 - Download the existing Parcel Fabric for area covered by the explanatory plan through [MyLTSA Surveyor Search and Download](#)
 - Choose a boundary line that is common to both the explanatory plan being prepared, and the downloaded fabric, to use as a reference baseline for bearing and scale

- Shift/translate the CAD linework to one end of the selected baseline, in order to approximately georeference the CAD drawing to UTM coordinates.
 - Rotate the CAD linework to align with the selected baseline, in order to establish approximate grid bearings for the drawing. If a true Combined Scale Factor for the area can be calculated, or derived from nearby control or georeferenced plans already in the Parcel Fabric:
 - scale the drawing to UTM grid distances using that scale factor
 - If Combined Scale Factor is not known:
 - use the length of the selected baseline to approximately scale the drawing to UTM grid distances
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- It is not necessary to include a Control .csv file for the selected PMBC parcel point(s) used to georeference the plan\
 - When specifying the Relative Survey Accuracy of an Explanatory Plan in a Survey Plan Submission, use Level 6 (+/- 1m / 3600" /1000PPM) unless it is part of a larger survey that has been accurately georeferenced (in the latter case, specify the same accuracy as the rest of the survey)

Posting Plans

- SPDS CAD files for Posting Plans should contain no linework on the [PMBC_PARCEL_LINE](#) or [PMBC_INTEREST_LINE](#) layer.
- All resolved or retraced boundaries should be on the [PMBC_RESOLVED_LINES](#) layer, whether or not they belong to the subject parcel(s) of the Posting Plan.

Building Strata Plans

General instructions for the preparation of SPDS CAD Files for Building Strata, Air Space, and Volumetric Space plans are outlined in Section 5(b) of Practice Bulletin No 3: [Surveyor General's Requirements for the Submission of a Survey Plan Dataset to Support ParcelMap BC](#).
(see Note at bottom)

- Include the perimeter boundary of the bare land extent of the strata development on the [PMBC_PARCEL_LINE](#) layer (typically, this is what is shown with a heavy black outline on the official plan of record).
- For Phased strata developments, only include the perimeter boundary of the current phase of the strata development on the [PMBC_PARCEL_LINE](#) layer (if the boundaries of previous phases have been resolved as part of the survey, include them on the [PMBC_RESOLVED_LINES](#) layer).
- Do not include any building outlines or offset lines to the building on any PMBC layers.
- Do not include interior divisions of the strata development, including individual Common Property areas or individual Strata Lots, on any PMBC layers.

Air Space, Volumetric Interest and Building Lease Plans

General instructions for the preparation of SPDS CAD Files for Building Strata, Air Space, and Volumetric Space plans are outlined in Section 5(b) of Practice Bulletin No 3: [Surveyor General's Requirements for the Submission of a Survey Plan Dataset to Support ParcelMap BC](#).
(see Note at bottom)

- Within ParcelMap BC, three dimensional parcels and interests (including spaces defined by floors or levels within a building) are depicted as a *schematic representation*, using the geometry of the parent parcel.
 - For an Air Space parcel: include the perimeter boundary of the parent parcel on the [PMBC_PARCEL_LINE](#) layer.
 - For a Volumetric Easement, Volumetric SRW, Building Lease, or any other interest with a three dimensional component: include the perimeter boundary of the titled parcel over which the charge is being raised on the [PMBC_INTEREST_LINE](#) layer.
- Do not include any interior divisions of an Air Space, Volumetric Interest or Building Lease on any PMBC layer.
- For Building Lease plans: do not include any building outlines or offset lines to the building on any PMBC layers.
- Note that the plan type for a Volumetric interest (including a Lease of a Building) in your Survey Plan Submission should be Section 99 – Volumetric (not Section 99 – Charge).
- If the parent parcel boundaries were not entirely resolved during the survey of the volumetric space, provide the best available representation of the parent parcel on the PMBC_PARCEL_LINE (for an Air Space) or PMBC_INTEREST_LINE (for Volumetric Interests) layer:
 - In the case of a parent that is separated into a number of distinct parts, use the perimeter boundary of the local part over which the Air Space or Volumetric Interest lies
 - Scenery linework, or linework copied from another plan, can be used to represent the parent if necessary. In such cases, the Accuracy of the Survey Plan Submission should be defined as Level 6 (+/- 1m / 3600" /1000PPM) to indicate that not all parcel boundaries have been accurately resolved

Plans Prepared in Grid distances (ABCLS Exemption under GSIR 3-4(1)(h))

- It is still necessary to provide an Average Combined Scale factor in the Survey Plan Submission. PMBC stores parcel geometry in grid coordinates but applies a CSF to calculate ground distances for the entire fabric
- Ensure that the supplied CSF is in the ground-to-grid direction, not the grid-to-ground direction

External References

- A-1 Association of BCLS: [General Survey Instruction Rules V3.11 – July 2016](#)
- A-2 [Surveyor General Circular Letters, LTSA](#), specifically [Circular Letter No. 463: Official Horizontal Datums for Georeferencing Legal Surveys in British Columbia](#)
- A-3 Practice Bulletin No 3: [Surveyor General's Requirements for the Submission of a Survey Plan Dataset to Support ParcelMap BC](#)
- A-4 Parcel Map BC: PMBC-RS-53-6939 [Survey Plan Dataset Specifications](#)

OPTIMIZING THE SURVEY DATA CONTROL POINT FILE

A **.csv (comma-separated value) formatted text file** describing the required georeferenced control points must be included:

- The file name must be saved with a **.csv extension**.
- The structure of the file is **based on a standard PNEZD points file**, with the addition of extra fields to record information about the Positional Accuracy of the control point.
- Each line in the file must contain **exactly ten (10) comma-separated fields**, even if no value is provided. The [table](#) below describes the content of these fields.
- **Do not include a header line in the file** – only include the actual control point data.
- The Control points for a survey plan submission are the (minimum) two georeferenced points required under GSIR rule 2-6(1).
 - Do not include any control points that are not shown within the official plan of record.
 - Do not include coordinates of survey posts (such as iron pins, lead plugs, or capped posts) unless they are labelled in the plan. Do not include the coordinates of an Active Control GNSS Reference Station.

Additional details about control point requirements can be found in the following references:

- Section 7 of [Surveyor General's Requirements for the Submission of a Survey Plan Dataset to Support ParcelMap BC](#)
- Parts 2-6 of [General Survey Instruction Rules V3.11 – July 2016](#)
- [Circular Letter No. 463: Official Horizontal Datums for Georeferencing Legal Surveys in British Columbia](#)

Sample Survey Data Control Point File

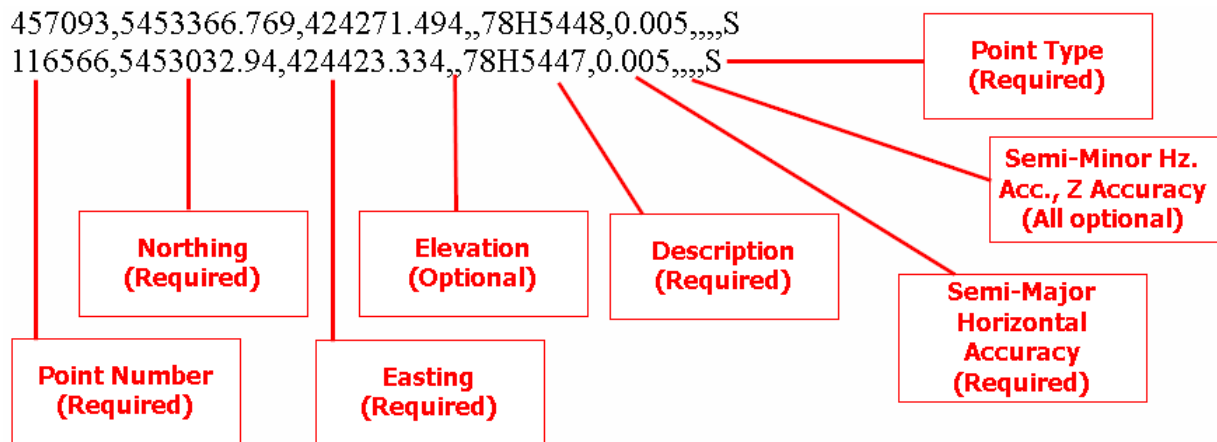


Table – Survey Data Control Point File Description

Data Element	Field Position	Status	Meaning
Point Number	1	Required	Unique numeric identifier for the control point <ul style="list-style-type: none"> • Cannot be alphanumeric – only numbers, no text, spaces, or dashes • For Government Control Monuments (GCMs) listed in MASCOT, this would be the GCM_NO number • For Survey control (established by Land Surveyor) this can be any unique id number
Northing	2	Required	Northing (Y-coordinate) in UTM grid units <ul style="list-style-type: none"> • Referenced to appropriate datum, as defined by Circular Letter No. 463

Data Element	Field Position	Status	Meaning
Easting	3	Required	Easting (X-coordinate) in UTM grid units <ul style="list-style-type: none"> Referenced to appropriate datum, as defined by Circular Letter No. 463
Elevation (Orthometric Height)	4	Optional	Height above geoid <ul style="list-style-type: none"> If no elevation has been provided, this field should be left empty
Description	5	Required	Short text description that uniquely identifies point within plan <ul style="list-style-type: none"> For GCMs, use Tablet Marking as read in field and recorded in MASCOT For Survey control (established by Land Surveyor) use label as shown in the registered
Horizontal Accuracy (Semi-Major)	6	Required for Survey Control Points	Estimated Horizontal Position Accuracy (EHPA) of a Survey control, in metres <ul style="list-style-type: none"> Expressed at 95% Confidence Level Must conform with specifications outlined in GSIR If EHPA is expressed as an error ellipse, this is the Semi- Major axis of the ellipse Not required if the control is a GCM listed in MASCOT (leave this field empty)
Horizontal Accuracy (Semi-Minor)	7	Optional	If EHPA is expressed as an error ellipse: the Semi-minor axis of the ellipse at a 95% confidence level (in metres) <ul style="list-style-type: none"> If empty, assumes error circle based on Horizontal Accuracy (Semi-Major)
Horizontal Accuracy Angle	8	Optional	If EHPA is expressed as an error ellipse: the Azimuth of the semi- major axis of the ellipse (in <i>decimal degrees</i>) <ul style="list-style-type: none"> If empty, assumes error circle based on Horizontal Accuracy (Semi-Major)

Data Element	Field Position	Status	Meaning
Z Accuracy	9	Required if Elevation included	If Elevation has been provided: the Estimated Vertical Positional Accuracy at a 95% confidence level (in metres) <ul style="list-style-type: none"> • For GCMs listed in MASCOT, leave empty
Point Type	10	Required	A coded value indicating the origin of a control point <ul style="list-style-type: none"> • Use 'G' (Geodetic) for a GCM listed in MASCOT • Use 'S' (Survey) for a control point established by a Land Surveyor specifically for the purposes of georeferencing an official plan of record • Use 'F' (fabric) for a point whose coordinates were derived from ParcelMap BC.