

Calgary



CAD Standard

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Document Revision History

Version	Summary of Change	Document Status	Published
0.1	Initial Draft (internal only)	Draft	2018-01-30
0.2	Draft Shared Externally on Demand	Draft	2018-04-19
1.0	First Public Release	Published	2018-07-01
1.1	Minor Typo Corrections	Published	2018-12-17
1.2	Expanded details of map projection specifications	Published	2019-12-05
1.3	Updated AutoCAD version number	Published	2020-12-15
1.4	Updated AutoCAD acceptable versions	Published	2022-01-17
1.5	Typos and updated AutoCAD versions	Published	2023-01-16
1.6	Typos and updated AutoCAD versions	Published	2024-01-15



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Purpose

The purpose of this manual is to outline the CAD Standard defined by The City of Calgary for various types of drawings as defined in the [Application of Standard](#). This manual is intended to be used by internal City staff and external consultants who are involved with the design and preparation of drawings. This Standard describes the drafting standard specifications for the drawings but does not indicate the content that must be included within them (i.e., it covers the “how” not the “what”). **This manual is to be used in conjunction with (and does not replace) the technical specifications, engineering design manuals, and other existing documents from different City divisions, which describe the content requirements and are available on calgary.ca.**

For more information on how to apply this Standard, refer to the [CAD Standard Guidance Document](#).



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Application of Standard

The City of Calgary requires that this standard be used for engineering drawings on capital projects that impact City of Calgary horizontal infrastructure initiated on or after January 1, 2019. The City also requires that this standard be used for drawings for subdivision construction projects initiated on or after January 1, 2020.

Usage of this standard is encouraged for CAD representations of buildings and other vertical infrastructure projects.



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Software

The preferred computer drafting program to be used by contractors for production of contract drawings for The City of Calgary is [AutoCAD®](#) and [AutoCAD® Civil 3D®](#) for civil specific work, both by [Autodesk®, Inc.](#), but files produced with any other CAD software will be accepted. The city provides templates created using the AutoCAD® 2018 file format but will accept files in any version from 2013 to 2024. These templates are provided to facilitate compliance with this Standard, but they cannot be used if the consultant chooses to use different software.

The City's CAD Standard lies not with the underlying design software used, but on the layers, colours, line styles, fonts, and blocks used to create the drawing.

Data Specifications

Map Projection Specifications

All drawings in digital form must:

- a) be in metric measurements and referenced to:
 - the 3 Degree Transverse Mercator (3TM) mapping projection
 - longitude of origin: 114° West
 - latitude of origin: 0° North
 - scale factor at origin: 0.9999
 - false easting: 0.000m
 - false northing: 0.000m
 - the 1983 North American Datum (NAD83)
 - reference ellipsoid: GRS80
 - semi major axis (a): 6,378,137.0000 m
 - semi minor axis (b): 6,356,752.3141 m
 - reciprocal of flattening: 1/298.257222101

- b) reference elevation information to the 1928 Canadian Geodetic Vertical Datum (CGVD28).

Date Specifications

All dates in drawings must be expressed in the Standard [ISO 8601 format](#) of YYYY-MM-DD.



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Units Specifications

All units must be displayed in SI ([International System of Units](#)). There should be a space between a measurement and the unit (e.g., 1030 m instead of 1030m).

CAD Layer Naming

The City of Calgary Standard CAD layer names conform to the [National Cad Standard](#) (NCS) Standard naming conventions. The [CAD Standard Guidance Document](#) lists all the existing layers. Where a Standard layer name does not exist, one may be created as long as it follows the Standard naming convention:

Dd-MAJR-MINR₁-MINR_n-S, where

- **D** is the Discipline Designator, Level 1 (mandatory, single alphabetic character)
- **d** is the Discipline Designator, Level 2 (optional, single alphabetic character)
- **MAJR** is the Major Group (mandatory, four alphanumeric characters)
- **MINR_#** is the Minor Group (optional, each four alphanumeric characters)
- **S** is the Status (optional, single alphanumeric character)

Symbols

The City of Calgary uses Standard symbols to represent existing features as picked up in a field survey, as well as design features that must be shown on drawings. The list of Standard symbols for different disciplines is in the [CAD Standard Guidance Document](#) and is also embedded within the templates.

Drawing Set Organization

Drawings should be organized in structured subsets. Each drawing must have a unique sheet identifier using a standard sheet identification format. It is recommended that files are named in a consistent format and stored in standard folder names. The standards that the City uses which may be adopted are detailed in the [CAD Standard Guidance Document](#).

Sheet Organization

All drawings shall use the City's Standard sheet organization as incorporated in the City supplied templates.

Drafting Conventions

All drawings shall use the Standard text, dimension, and multileader styles, as well as the Standard linetypes and table styles.

Standard hatching patterns are to be used for commonly used features or materials.

These are described in the [CAD Standard Guidance Document](#).

The North arrow should be close to top and on the right hand-side of the sheet as described in the [CAD Standard Guidance Document](#).



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Terms & Abbreviations

Where abbreviations are necessary, Standard City of Calgary abbreviations must be used as listed in the [Terms and Abbreviations document](#). If necessary, new abbreviations may be used, but they must be referenced in a list of abbreviations in a general sheet.



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References

1. City of Calgary [CAD Standard Guidance Document](#)
2. Autodesk®, Inc - <https://www.autodesk.ca/en>
3. International Organization for Standardization: Date and time format – ISO 8601- <https://www.iso.org/iso-8601-date-and-time-format.html>
4. Bureau International des Poids et Mesures - SI Brochure: The International System of Units (SI) - <https://www.bipm.org/en/publications/si-brochure/>
5. United States National CAD Standards – V6 – a product of the National Institute of building Sciences buildingSMART alliance™ - <https://www.nationalcadStandard.org/ncs6/>