

ASCM LEGACY DATA

Land Surveys Unit, Geodetic Control

Introduction

Alberta Survey Control Marker (ASCM) data is available for three reference frames: The North American Datum of 1927 (NAD27), the original derivation of the North American Datum of 1983 (NAD83(Original)), and the Canadian Spatial Reference System (CSRS) derivation of NAD83 (NAD83(CSRS)). This fact sheet reviews the NAD27 and NAD83(Original) datums including currency of coordinate data, coordinate differences between datums, and phasing out of ASCM integration and maintenance of coordinate data on each datum.

NAD27

NAD27 is based on the Clarke 1866 ellipsoid that is best fit to North America (at a control point at Meades Ranch, Kansas, USA). Subsequently, NAD27 was propagated and maintained across Canada via various adjustments until implementation of the North American Datum of 1983. Integrated (and maintained) NAD27 coordinate data was produced for ASCMs up to June 1, 1994. With implementation of NAD83(Original) on this date, the Geodetic Control Unit stopped integration/maintenance of ASCMs relative to NAD27. The primary reasons for not continuing to integrate and maintain coordinate data relative to NAD27 include large systematic errors at the local, regional and provincial-level as well as a lack of compatibility with modern space-based positioning systems (e.g., the Global Positioning System). NAD27 coordinate data for ~32,500 ASCMs is available in Excel spreadsheet format from the Government of Alberta open data portal at <https://www.alberta.ca/geodetic-control-unit.aspx#toc-5>. The data is split into four spreadsheets; ASCMs in the City of Edmonton, ASCMs in the City of Calgary, ASCMs in the other 71 urban cadastral areas in Alberta, and ASCMs in the rest of Alberta. See the readme file attached to the spreadsheets for further details.

NAD83(Original)

On June 1, 1994 Geodetic Control started formal integration and maintenance of the Alberta Survey Control network with respect to the NAD83(Original) datum following completion of the years-long international, Canadian and provincial readjustments of coordinate data. NAD83 is based on the Geodetic Reference System 1980 (GRS80) ellipsoid with what was considered to have a geocentric origin giving a global model of the earth as well as being compatible with space-based positioning systems. NAD83(Original) is a marked improvement over NAD27 with good compatibility at the local and regional-levels in Alberta. NAD83(Original) coordinate (and non-coordinate) data is available for ~33,600 ASCMs (including destroyed ASCMs) from the Spatial Information (SPIN) System at Alberta Land Titles (<http://www.spin.gov.ab.ca>). For more information on NAD83(Original), see Fact Sheet No.6.

Coordinated Differences

On average, NAD83(Original) coordinates of Alberta Survey Control Markers (ASCMs) differ from NAD27 values by approximately 0.2 arc-seconds (or 6 to 7 m) northerly in latitude, and approximately 3.6 arc-seconds (or 20 m) westerly in longitude. Because of the change in ellipsoid dimensions, transverse Mercator plane coordinates change approximately 225 m northerly and 70 m westerly going from NAD27 to NAD83(Original). Note that these numbers are averages; the actual change varies throughout the province.

Phase-out of NAD27 and NAD83(Original)

NAD27 coordinate data has not been integrated/maintained since implementation of the NAD83(Original) datum on June 1, 1994. Further, with implementation and publishing of ASCM coordinate data referenced to the NAD83(CSRS)v7 Epoch 2010 reference frame (see Fact Sheet No.1),

integration and maintenance of coordinate data relative to NAD83(Original) is being phased out. NAD83(Original) ASCM coordinate data will continue to be integrated/maintained for the next three to five years starting in 2020. By 2025, at the latest, all ASCMs will only be integrated/maintained relative to NAD83(CSRS)v7 Epoch 2010. NAD83(Original) coordinate data will continue to be available, but only in Excel spreadsheet format.

Need more information?

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