Alberta Provincial High Precision Network

NAD83(CSRS)v7 Epoch 2010 coordinates and CGVD2013 elevations for Alberta Survey Control Markers (ASCMs)

Alberta

Environment and Parks, Government of Alberta

March 2021

Alberta Provincial High Precision Network

Version 1.0

Land Surveys Section, Lands Policy and Programs Branch, Lands Division

Table of Contents

Alberta Provincial High Precision Network

Classification: Public

Preamble

This document describes the contents of an Excel spreadsheet that comprises Alberta's Provincial High Precision Network (HPN). The spreadsheet consists of a subset of the published Alberta Survey Control Markers (ASCMs) with NAD83(CSRS)v7 Epoch 2010 coordinates and CGVD2013 elevations.

This document supersedes the *NAD83(CSRS)ASCMSubsetDataReadMe.doc* file produced by the Geodetic Control Unit (Sustainable Resource Development, now called Alberta Environment and Parks) on March 3, 2010.

For technical assistance and/or additional information on the spreadsheet and its contents, please contact:

> Geoff Banham, P.Eng.
> Geodetic Control
> Lands Policy and Programs Branch
> Lands Division
> Alberta Environment and Parks
> 15th floor, Oxbridge Place
> 9820 - 106 Street
> Edmonton, Alberta T5K 2J6
>
> phone: (780) 422-1291
> e-mail: Geoff.Banham@gov.ab.ca

This documents contains links to data available for download from the Government of Alberta Open Data archive. If the links are no longer active, the documents may be searched for through commonly used search engines.

1. Introduction

This document describes the contents of an excel format spreadsheet of ASCMs that constitute the provincial HPN. There are currently 1120 ASCMs included in the HPN. In addition, this listing is not static and is occasionally updated with new ASCMs as they are established and integrated into the Alberta Survey Control network. This spreadsheet is current to November 6, 2020.

The provincial HPN has a nominal spacing of 800 m to 1500 m in urban cadastral areas (formerly Municipal Integrated Surveying and Mapping – MISAM areas) and 10 km to 20 km spacing is non-urban areas. Currently, there are 37 urban municipalities with a minimum of two, and up to three, HPN ASCMs within their MISAM area. Users can determine which ASCMs are in which municipalities by sorting the map name data within the spreadsheet. As noted, the density of HPN ASCMs in non-urban areas of Alberta is much lower, but when using Global Navigation Satellite System (GNSS) surveying techniques (i.e., GPS, GLONASS, GALILEO, etc.), it is dense enough to meet most user needs.

All ASCMs within the provincial HPN were either originally integrated or re-integrated via GNSS surveying techniques. In addition, these markers are located such that they can physically support collection of GNSS observational data (i.e., in locations where multipath, imaging and EMF interference are typically not an issue). Contact Geodetic Control for additional information.

The HPN ASCMs are based on the NAD83V7.0.0.AB.1 provincial readjustment of the Alberta Survey Control network. The geometric reference frame is NAD83(CSRS) version 7 at Epoch 2010 (i.e., NAD83(CSRS)v7E2010) combined with the Canadian Geodetic Vertical Datum of 2013 (i.e., CGVD2013) for the vertical.

2. NAD83(CSRS)v7E2010 and CGVD2013 Provincial HPN data

The spreadsheet consists of 14 columns of data for the 1120 ASCMs currently in the subset. The content of each of the columns is briefly outlined below. The listing is currently sorted by ASCM number, but may be sorted in numerous ways to meet end user needs. Of note, those HPN ASCMs that are also Canadian Base Network pillars within Alberta are highlighted in red in the listing to facilitate users. The spreadsheet is available at https://open.alberta.ca/publications/nad83-csrsv7_e2010_cgvd2013_provincial_hpn_data-xlsx.

2.1 HPN Data Spreadsheet Contents

For further information on each of the data types provided within the spreadsheet, users are invited to download the ALBERTA SURVEY CONTROL PRODUCTS MANUAL from the Government of Alberta open data web-site at https://open.alberta.ca/publications/0773212981. The manual provides comprehensive information on each of the data types given in the file.

For each ASCM listed in the HPN Data spreadsheet, the following information (data types) is given:

- ASCM-NO

- Tablet Marking

- Mapsheet Name
    - Map Name for ASCMs within the former MISAM areas.
    - 1:250,000 NTS Map Name for all former non-MISAM areas.

- Mapsheet Number
    - 1:5,000 3TM Map Number for ASCMs within the former MISAM areas.
    - 1:250,000 NTS Map Number for all non-MISAM areas.

- Marker Condition*

- Horizontal Classification - gives the horizontal Integration Status and the Order.

    - Horizontal Integration Status
        - Integrated
        - Not Integrated
        - Provisional

- Not Classified
- Approximate
- Consult Agency
  - o Order
    - 1 – First Order
    - 2 – Second Order
    - 3 – Third Order
    - 4 – Fourth Order
    - U – Unclassified

- Horizontal Datum – NAD83(CSRS)v7E2010

- Geographic Coordinates (degrees minutes seconds) - gives the Latitude and Longitude.

- Orthometric Height (metres)
  - o Vertical Datum = CGVD2013

- Vertical Integration - gives the vertical Integration Status and the vertical Integration Method by which the ASCM was integrated into the geometric reference frame.

  - o Vertical Integration Status
    - Integrated
    - Not Integrated
    - Provisional
    - Not Classified
    - Approximate
    - Consult Agency
  - o Vertical Integration Method
    - SPIRIT LEVELS
    - GPS SAT. POS.
    - SPIRIT/GPS
    - CONSULT AGENCY

- 3-Degree Transverse Mercator Coordinates (metres)

  - o Gives the 3TM coordinates as well as the associated Reference Meridian (degrees), Station Ellipsoid Factor, Station Combined Factor, and Meridian Covergence (degrees minutes seconds).

- Universal Transverse Mercator Coordinates (metres)

  - o Gives the UTM coordinates as well as the associated Reference Meridian (degrees), Station Ellipsoid Factor, Station Combined Factor, and Meridian Convergence (degrees minutes seconds).

- Geoidal Undulation** (metres)

- Meridian Deflection** (arc-seconds)

- Prime Vertical Deflection** (arc-seconds)

* Reflects the known condition of the ASCM at the time of creation of the spreadsheet.

**The geoid information given in the listing is based on the CCG2013a geoid model.

Classification: Public