**CCSF Datums, Coordinates Systems, Reference Frames and Acronyms**

05/10/16 Version 3.8

***General survey note for CCSF mapping purposes***

*The following statements must be included on maps of surveys in the City & County of San Francisco referenced to SFCS13 horizontal and/or SFVD13 vertical coordinate systems. If the survey is not based on one or both systems, then edit appropriately.*

**BASIS OF SURVEY: PROJECT DATUMS, REFERENCE SYSTEMS & PROJECTION**

**Geometric Datum:** North American Datum of 1983: NAD83 (2011) 2010.00 Epoch

**Reference Network:** “CCSF-2013 HPN” (High Precision Network per Record of Survey #8080)

**Projection:** The plane coordinates are based on a local grid coordinate system known as the City & County of San Francisco 2013 Coordinate System (SFCS13). The SFCS13 is a low distortion (near ground) Mercator Projection. Within the City, the combined grid factor is generally less than 1/100,000 with the origin and central meridian located near the center of the City. See Record of Survey #8080 recorded in Book EE of Survey Maps, Page 147-157, S.F.C.R. and the CCSF DPW Web Site for projection parameters.

**Horizontal Control:** The horizontal datum was recovered based on HPN or HPND points xxx and xxx shown hereon.

**Vertical Datum:** “CCSF 2013 NAVD88 Vertical Datum” (SFVD13)

**Reference Network:** CCSF 2013 High Precision Leveling Network

**Vertical Control:** The vertical datum was recovered based on benchmarks xxxxx and xxxxx shown hereon and described on the CCSF DPW Web Site.

[Note: Substitute the project specific HPN or HPND control point ID (xxx) and benchmark ID (xxxxx) numbers and list in a table of coordinates with descriptions.]

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**City Approved Acronyms:**

For consistency, use the following acronyms when referring to the systems described herein.

 CCSF-HPN = City & County of San Francisco 2013 High Precision Network

 HPN = High Precision Network (points 101-120)

 HPND = High Precision Network Densification (points 201-999)

 SFCS13 = City & County of San Francisco 2013 Coordinate System

 SFVD13 = City & County of San Francisco 2013 NAVD88 Vertical Datum

**Notes:**

1. “City Datum” or “Old City Datum” is a reference to the superseded historic vertical datum.
2. “Converted City Datum” refers to the equation “SFVD13 – 11.35 feet” as directed by the CCSF Surveyor to **estimate** the Old City Datum.
3. “1991 City Base Map” refers to a map referenced to NAD83 (1992) 1991.35 Epoch State Plane Coordinate System Zone III published in 1999. Prior to 2013, City projects were often based on coordinates scaled from this map.
4. “2013 City Base Map” refers to the “1991 City Base Map” transformed in 2013 to the City & County of San Francisco 2013 Coordinate System based on NAD83 (2011) 2010.00 Epoch as described in Record of Survey #8080.

**CCSF DATUMS & REFERENCE NETWORKS**

**Geometric & Horizontal Datum:**

The City & County of San Francisco (the City) geometric and horizontal datum is the North American Datum of 1983, 2011 Adjustment at the 2010.00 Epoch and referred to as “NAD83 (2011) 2010.00 Epoch”. This datum realization is referenced by the published latitudes, longitudes and ellipsoid heights on the 2013 High Precision Network (HPN). A near ground system of plane coordinates was created for the City in 2013 similar to the California State Plane Coordinate System. The System is referred to as the “City & County of San Francisco 2013 Coordinate System” (SFCS13). This System is used for coordinating surveying and mapping projects and GIS. The coordinate system is a low distortion mercator projection designed such that the combined grid factor is generally less than 1/100,000. The projection origin (Projection North = Geodetic North) is located near the center of the City which minimizes the convergence of meridians to +/-3 minutes at the east and west edges of the City. This projection is applied to NAD83 (2011) 2010.00 Epoch latitudes and longitudes to obtain grid (plane) coordinates and is properly referred to as the “NAD83 (2011) 2010.00 Epoch City & County of San Francisco 2013 Coordinate System”.

**Vertical Datum:**

The City vertical datum is the “CCSF 2013 NAVD88 Vertical Datum” (SFVD13) based on NAVD88 as recovered by the 2013 City high precision leveling surveys. This datum realization is referenced by benchmarks in the “CCSF 2013 High Precision Leveling Network”.

**Reference Networks:**

The “NAD83 (2011) 2010.00 Epoch” geometric datum and the “City & County of San Francisco 2013 Coordinate System” (SFCS13) are referenced by the CCSF 2013 High Precision Network (CCSF-2013 HPN). A reference to the “HPN” is to the physical monuments constituting the network not to the SFCS13 coordinate system or SFVD13 vertical datum. The “CCSF 2013 NAVD88 Vertical Datum” (SFVD13) is referenced by the benchmarks in the “CCSF 2013 High Precision Leveling Network”.

Note: For more information and SFCS13 Projection Parameters see Record of Survey #8080 and the City web site at <http://sfdpw.org/index.aspx?page=1781>).