

Why 3 markers at a Mile High?

# Denver, CO

## The Mile High City

- All 3 bench marks on the steps of the Colorado State Capitol are at a Mile High (5280 feet) based on different references (zero elevation - the starting point). The changes reflect an evolution in methods, data, equipment, and knowledge.
- The technique used to determine these elevations is called Geodetic Leveling.
- Geodetic leveling employs precise scientific instruments capable of measuring elevation differences accurate to a thousandth of a foot.

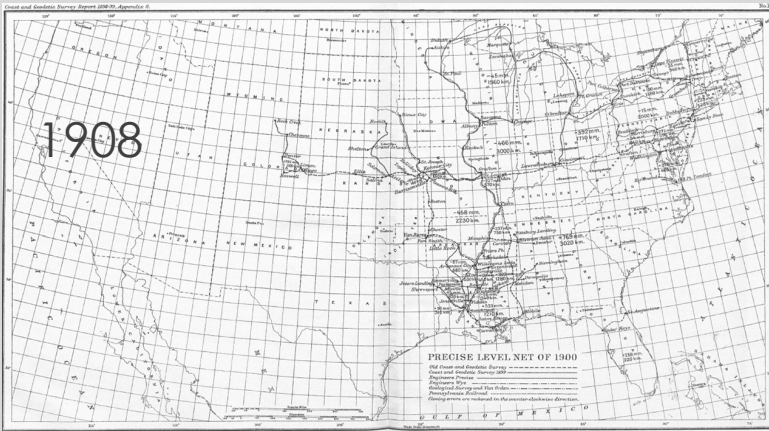


- All 3 bench marks are correct based on the datum (elevation reference) used at the time of the survey.
- What actually changed was how the zero elevation was defined.



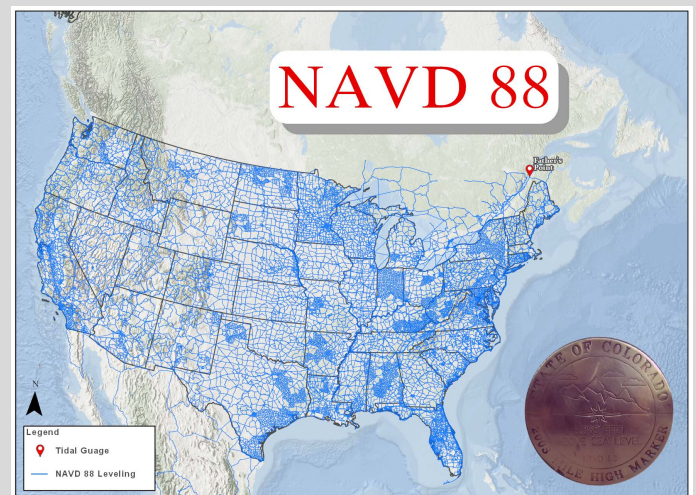
**1908**- Leveling had reached Denver. Elevations were referenced to Mean Sea Level (MSL) along the East Coast

**1909**- The first mile-high plaque was set by University of Denver students and Professor Herbert A. Howe.



**1947** - "ONE MILE ABOVE SEA LEVEL" was engraved into the 15th step due to repeated theft of plaques installed since 1909.

**1969** – A new mark was installed in the 18th step to mark a Mile High based on the National Geodetic Vertical Datum of 1929 (NGVD29; originally the Sea Level Datum of 1929 and renamed in 1973). Instead of using MSL from the East, NGVD29 used 26 tide gauges on both coasts to determine a different MSL. A total of 66,315 miles of leveling had now been completed across the entire country.



**1991** - The North American Vertical Datum of 1988 (NAVD 88) was published by the National Geodetic Survey (formerly the Coast and Geodetic Survey and Survey of the Coast). This datum held only one tidal bench mark (located at Rimouski, Quebec, Canada) as the zero elevation for the U.S., Canada, and Mexico. Over 620,000 miles of leveling had now been completed across the country. NAVD88 is the current official U.S. elevation datum.

**2003** – A new bench mark is installed in the 13th step based on NAVD88.

**2022** - The National Geodetic Survey will publish a new Vertical Datum for the country. Elevations will be based on gravity. In which step will that bench mark be placed? Visit [geodesy.noaa.gov](http://geodesy.noaa.gov) for more information.

*Also, the 20th row of the upper 300 sections at COORS Field highlights the mile high elevation with purple seats.*



# Types of Surveys

**Court Exhibit Surveys:** Surveys involving accumulation and preparation of evidence for courtroom testimony involving boundary disputes. Traffic accident and crime scene situation surveys are also included.

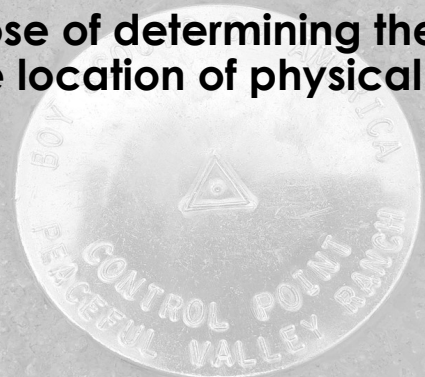
**Flood Elevation Surveys:** Surveys to obtain elevations to determine the Flood Hazard for properties that occupy a Flood Zone.

**Mortgage or Title Surveys:** Surveys made for lending or insuring agencies to evaluate title problems, if any, relating to actual occupation and possession.

**Preliminary Surveys:** Surveys to obtain data from which to determine the feasibility of, and/or to prepare plans for a development or construction project.

**Subdivision Surveys:** Surveys dividing undeveloped areas of land into blocks, lots, streets, parks, etc., in conformance with governing ordinances. This procedure includes boundary work, planning, city or county review, and filing for a public record.

**Topographic Surveys:** Surveys for the purpose of determining the configuration of the earth's surface and the location of physical objects thereon.





**Do you know who  
the three land  
surveyors are?**