

**Base 9 Geodetic Consulting Services
Dave Doyle
NGS Chief Geodetic Surveyor (Retired)**



DATUM TRANSFORMATIONS

This seminar covers the relationship of and transformations between the several horizontal/geometric and vertical geodetic datums most commonly used in the United States. These include: The North American Datum of 1927 (NAD 27), the North American Datum of 1983 (NAD 83), the International Terrestrial Reference Frame (ITRF), the World Geodetic System of 1984 (WGS 84), the National Geodetic Vertical Datum of 1929 (NGVD 29) and the North American Vertical Datum of 1988 (NAVD 88). The presentation specifically demonstrates and examines the gridded utilities NADCON, GEOCON, GEOCON11 and VERTCON developed by the National Geodetic Survey (NGS), the commonly used 3-parameter abridged Molodensky transformations computed by the U.S. Defense Mapping Agency (DMA), and the more rigorous 14-parameter Helmert transformations supported by the NGS utility HTDP (Horizontal Time Dependent Positioning). The program closes with a review of the status of the upcoming changes to NAD 83 and NAVD 88 planned for 2022.