

## **CITY OF GRANBURY, TEXAS GPS MASTER CONTROL NETWORK**

### **BASIS FOR THE CONTROL NETWORK**

Baird, Hampton & Brown, Inc. (BHB) in conjunction with the City of Granbury Public Works staff determined the monument location for the City of Granbury Global Positioning System (GPS) Master Control Network. The eight (8) monuments set are 2 ½ inch style "C" Berntsen-U.S. Army Corp of Engineers Type 1 brass disc. The installation procedure consist of drilling a ¾ inch hole three inches deep in an existing concrete structure and inserting the monument stem into the hole filled with a concrete epoxy. All monument installation and field work was performed by Baird, Hampton & Brown, Inc.

The Geographic Positions and State Plane Coordinate values for the City of Granbury GPS Master Control Network were established by utilizing two (2) independent two (2) hour minimum GPS Static data collection session for each monument on March 11, 2005 and March 14, 2005. The data collected for the monuments were processed using a local National Geodetic Survey (NGS) monument called "Granport" PID CS3195 ([www.ngs.noaa.gov](http://www.ngs.noaa.gov)) as the controlling monument using the published data. The GPS Static data was processed using Trimble Geomatics Office (TGO) Version 1.61 software for the horizontal values. The data from all GPS Static data collection sessions were also processed using the NGS Online Positioning User Service (OPUS) using the rapid ephemeris orbit for additional horizontal position checks.

The North American Vertical Datum (NAVD88) elevations shown on the eight (8) monuments were determined by the GPS Static data collection sessions mentioned above using Geoid03 as the Geoid Model. The GPS derived elevation on "Granport" is based on an independent four (4) hour GPS Static data collection session and two (2) independent nine (9) hour GPS Static data collection sessions on March 8, 2005, March 11, 2005 and March 14, 2005 and processed using OPUS rapid ephemeris orbit resulting in a NAVD88 Geoid03 elevation of 769.85 (feet). For an additional vertical check, a three wire balanced level run from NGS Monument "S3", PID CS2164, vertical order-First, Class II, ([www.ngs.noaa.gov](http://www.ngs.noaa.gov)) located on the East wall of the Hood County Courthouse having a NAVD88 published elevation of 725.34 (feet) to NGS monument "Granport" resulted in a BHB elevation for "Granport" of 769.85 (feet). The OPUS NAVD88 Geoid03 elevation of 769.85 (feet) on NGS monument "Granport" was used as the vertical basis for the eight (8) monuments.

All conversions from Geographic Positions to State Plane Coordinate and U.S. Survey feet values along with the combined scale factor data are per reports generated by Trimble Geomatics Office (TGO) Version 1.61 software.

The monument as shown below in an example of the set monuments in the field with each monument stamped with its designated number.

