

**FLOOD CONTROL DISTRICT OF
MARICOPA COUNTY
FCD 2007C045**

**GILLESPIE ADMP MAPPING
PHASE II**

**David Evans and Associates, Inc.
SURVEY REPORT FOR
Sanborn Map Company**



DAVID EVANS AND ASSOCIATES INC.

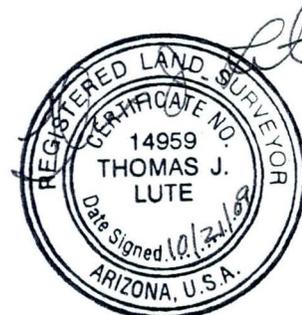
OCTOBER 21, 2009

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SURVEY REPORT
EXECUTIVE SUMMARY

Scope of work. This survey is to provide survey data for associated drainage structures and bridges within Phase II of approximately three hundred twenty square miles of floodplain mapping within the Gillespie Area Drainage Master Plan Project for the Flood Control District of Maricopa County. See the attached Figure A – Map of Project Area for the project limits and Phase I and Phase II limits. The ground control should be sufficient to allow an aerial survey contractor to compile topographic mapping on a 2-foot contour interval and at a scale of 1 inch equals 200 feet. The ground control shall meet or exceed the requirements as specified in FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, Volume 1 : Flood Studies and Mapping, February, 2002.

Control datum. GPS control is based upon published National Geodetic Survey (NGS) values. Horizontal control was based upon Maricopa County GDACS stations, which are published NGS B- order (1:1,000,000) control stations in a NAD 83 (1992.0 epoch) reference frame. Vertical control was based upon the same Maricopa County GDACS B-order stations, which have published NGS third-order, class II ellipsoid heights. The Maricopa County GDACS stations are either set in bedrock, or are stainless steel rods driven to refusal.

Field survey data was collected using both Leica and Trimble equipment and processed with Leica Geomatics Office (LGO) and Trimble Geomatics Office (TGO) software. GPS techniques, utilizing the hybrid geoid model developed for the GDACS project, were employed to estimate NAVD 88 orthometric heights, when using TGO. When using LGO, the orthometric heights were derived by applying Geoid 03 to the ellipsoid heights. This method was employed to eliminate blunders in entering the data into the Leica equipment. A spreadsheet showing the NGS control points in the project area and the A Team project panel points projected to both of the above height definitions shows an average difference of 0.006 feet vertically and a standard deviation of 0.059 feet vertically. This result was also confirmed by collecting adjacent points with both systems along the Gila Bend Canal. A copy of the spreadsheet is included in Section C on CD.



Expires 06/30/2012

NARRATIVE

Procedures

Field Surveys of Structures

Survey data was collected using RTK GPS or terrestrial total station procedures. Base stations for RTK were set on NGS B Order Geodetic Control points, project control panels established by A Team or control points established by DEA using static GPS procedures. Control points established by DEA were derived using two independent vectors from occupations of 6 to 10 minutes or more, as dictated by the distance from the existing control points.

Additional bridge details and cross-sections were collected using RTK GPS, terrestrial total station or measuring down from the bridge deck, as field conditions dictated.

Copies of all Station Data sheets are included in Section B on CD.

All control points established by DEA are listed in the FCD's HIS spreadsheet format in Section C on CD.

Survey data is included in Section F on CD.

Figure A
 Gillespie ADMP Mapping
 Phase II
 Project Limits

