

**Field Notes Presents Synopses of Surveying and Mapping Entries Into ACEC's 2004 Engineering Excellence Awards**

All the entries below came up from the ACEC Member Organization level. For tips on how to prepare a winning entry go to www.acec.org/cops and click on the June 2003 edition of "Field Notes".

Greenfield Village – is a historic landmark in Dearborn, MI originally built by Henry Ford in 1929. Wade-Trim, Northville, MI. It was suffering from power outages, flooding and sink holes. Over 18 miles of sewers, piping and gas lines were replaced along with 7 miles of roadway and sidewalk. Five survey crews were needed. Wade-Trim provided **design survey and construction staking services** for the restoration. Using the boundary survey provided by The Henry Ford, survey crews established dozens of horizontal and vertical control points throughout the village to form the basis for staking. GPS allowed control points to be established quickly and digital levels sped up leveling. These were supplemented by optical levels and total stations used extensively for daily staking. Stakeouts were used not only for buildings but old growth trees as well. The project was completed in nine months to meet the aggressive construction schedule.

City of Schertz, TX – mapping a city through GIS technology. Ford Engineering, San Antonio, TX.

Mapping with GIS has provided the city with a flexible set of tools to perform diverse functions by providing the data management tools needed and by making it easier to share data within their own departments. Schertz officials were being required to reorganize city planning for complex political and regulatory requirements. Some examples of GIS functions planned for the city are:

- Streets, parcels and zoning
- Major and minor thoroughfares
- Proximity to schools and parks
- Flood zones
- Water and sewer maintenance
- Boundary resolutions

These are now accessible to instantaneous and copious amounts of information in virtual form for various applications.

The Kissimmee River Restoration – Lowe Engineers, Atlanta, GA, was tasked with performing a project that included **remote sensing, field surveys and a complete GIS** of the data of more than 25,000 acres in the Kissimmee River Basin. The project required the use of hyperspectral imaging, GPS and other state of the art technology to determine the most beneficial methods to reduce costs and increase accuracies. The hyperspectral imaging was used as a means to evaluate its potential to detect, measure

and map a large and diverse geographical area.

Benchmarking of U.S. Insular Areas – SSFM International Inc, Honolulu, HI. The purpose of the project, done for the U.S. Department of Interior, was to gain an understanding of the condition of the capital improvements on each of the ten Pacific islands in the study and determine the level of maintenance of improvements once they had been built. The value of the work provides DOI and the island governments a common language with which to discuss infrastructure issues. **SSFM merged a GIS system with a custom designed database program** to be used as an information vehicle that compiled and catalogued the findings. The complexity of the project involves the collection of a significant amount of data from each island, the cataloguing and analysis of that data, and the preparation of a system to store and retrieve the data, and to create a baseline for the infrastructure inventory. A book of standardized, quantitative benchmark indicators to measure the infrastructure was established.

St. John's University Master Plan Survey – Langan Engineering and Environmental Services, New York, NY, was requested to prepare a standard site survey of the entire campus. What was needed was a CADD 3-D model and survey of the existing campus to allow for the design of future construction projects. Langan developed a **phased cycle approach to preparing the topographic survey**. The process consisted of seven phases - including aerial mapping, boundary survey, rough utility locations, preliminary map, final utility locations, ground topography and final mapping.

The innovative approach of advanced survey technologies and traditional survey techniques provides St. John's with a cost effective solution to the growing challenge of mapping the existing conditions.

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Business Opportunities at Homeland Security

Business Procurement Consultant Alan J. Shepherd, says numerous opportunities await small engineering firms at the Department of Homeland Security (DHS). During a recent Market Forecast Series meeting, Shepherd provided strategic and tactical insight for small firms interested in doing business with DHS. Last year DHS procured over \$1 billion in goods and services, of which 40 percent was awarded to small businesses.

Shepherd gave a brief overview of each of the four DHS areas of interest: Emergency Preparedness and Response; Science and Technology; Information Analysis and Infrastructure Protection; and Management; and the opportunities available for small businesses.

Shepherd also advised attendees how to market their services to DHS through matchmaking events, and how to identify larger prime contractors that offer subcontracting opportunities to small businesses through SBA's Subnet website, <http://web.sba.gov/subnet/>.

Information contained on the DHS website can assist small businesses that wish to contract with the Department.