on Our Mind at ESP

Volume: 5 Second Quarter 2011

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Welcome to the quarterly newsletter from ESP Associates, PA (ESP). Each quarter, ESP produces an informational article about a particular topic that we feel may be of value to our clientele. We hope you find the material informative and we welcome the opportunity to assist you with any support that you may need. All articles presented are also available on our website www.espassociates.com.

Mobile 3D Laser Scanning/Mapping – What can it do for you?

When you get past all the technology, mobile scanning is essentially the process of obtaining high density of survey point data and survey grade photogrammetry simultaneously at posted highway speeds. Advances in technology have made this process possible through the use of multiple pieces of equipment working together to collect data, calculate x, y and z coordinates of the data, adjust the data to account for the speed of the vehicle, adjust the data for vertical and horizontal movement of the vehicles, etc., not to mention the software that can make all this happen seamlessly. The basic system consists of two GPS units, a weapons grade IMU (gyro), two eye safe laser scanners, DMI (distance measuring instrument) and two on board computers.

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When you think through the calculations and adjustments that are occurring for each point and knowing that the equipment is collecting thousands of points per second, it can be mind boggling.

This data collection system is ideal for both GIS and Survey-Grade applications. GIS data collection can be performed with minimal planning and project preparation. In fact, aside from avoiding inclement weather, very poor GPS satellite availability, poor sun angles (affecting quality of photography) and gridlocked traffic, the system is ready to collect GIS data out of the box with minimal GPS post processing. The true beauty of the GIS component is the automated feature extraction software. Trident Analyst software is an “auto recognition” software programmed to perform a search, analysis and extraction of almost any identifiable object from the collected data set.

These technological advances allow for the “intelligent” collection of information in very efficient timeframes. The following are some examples of objects/assets for automatic extraction:

- Light/power poles
- Guard Rails
- Signs
- Roadway markings (turn arrows, travel lanes, centerline stripes, stop blocks,
- Fire Hydrants
- Water valves
- Sidewalks/Driveways
- Storm/Sanitary Sewer Manholes/Drop Inlets, Catch Basins
- Towers (Cell, power, etc.)
- Power Lines
- Trees
- Fencing
- Building details
- Landscaping

We have used this technology to quickly inventory features and their respective condition in a variety of applications including, roadways, distressed asset neighborhoods, existing pavement condition documentation, inventory conditions at

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educational facilities, etc.

The survey grade collection process is the same as the GIS approach with the addition of fixed survey targets similar to aerial mapping. Additional considerations and planning is implemented to substantially increase accuracy. Under proper conditions, targeting and minimal satellite interference, we can acquire data at sub centimeter accuracies at highway speed. Pavement DTM's, bridge clearances, features, etc. can be delivered in standard formats for Microstation, AutoCad, or ESRI supported formats.

ESP is very excited about our most recent investment in modern technology. We call this equipment "A solution in search of problems." When you have a data collection need or a problem that could use high data collection in a quick timeframe, call ESP. We may have the solution for you…