



PROJECT HIGHLIGHTS

- City uses Juno ST handhelds to record and maintain data about 5,232 street signs
- Handheld GIS data collection system enables city to complete street sign work in a fraction of the time
- Increased efficiency means improved asset management efforts for city
- Pocket-sized Juno ST handheld is easy for field crews to learn and use

PROJECT: Street Sign Inventory & Maintenance

PROJECT DATE: 2007

Most people around the world encounter street signs every day. Very few of them, however, think about them the way Quint Pertzsch, GIS coordinator for the City of Golden, Colorado does. Because of this, Quint knew there had to be a way to more efficiently track and maintain data about the city's 5,232 street signs than the cumbersome paper process in place until recently.

He was right. After just a few short months, the City of Golden is completing its street sign inventory work in a fraction of the time using Juno™ ST handheld Geographic Information System (GIS) data collection units from Trimble and mobileSIGNview software from CartêGraph.

Nestled at the base of the Rocky Mountains, approximately 20,000 residents and thousands of visitors rely on the city's network of signs to tell them when to stop, yield, and watch for children crossing, warn of upcoming hazards, provide the name of streets and parks, and more.

Keeping an accurate database of the city's signs, as well as recording data about the condition and maintenance of them, is the responsibility of the City of Golden. Until recently, city workers using handheld Global Positioning System (GPS) receivers would travel throughout the city, electronically recording the location of each sign.

Later, a second team of workers would revisit each sign with paper forms, writing down information such as what kind of sign it was, its condition, what direction it faced, and more. Back in the office, a data

entry worker would enter all of the data from the paper forms into the city's database.

"The manual system we had in place was time consuming, hard to manage, and repetitive," said Pertzsch. "It took our field crews at least 10 minutes to find and fill out the right paperwork for each sign, and if their handwriting was hard to read it took even longer for the data entry person to decipher what they meant and enter it into the system. We knew there had to be a better way."

Just as Pertzsch and his team began researching their options, they heard about mobileSIGNview, a new software product from CartêGraph designed as an efficient and cost-effective way to improve sign inventory, inspection, and maintenance work in the field.

"For the hardware component, we knew we wanted a highly productive, reliable handheld computer with a built-in GPS receiver that would also be small, lightweight, and easy for our field crews to learn and use," said Pertzsch.

The city purchased two, pocket-sized Juno ST handheld GIS data collection units from Trimble. The Juno ST handhelds come equipped with Windows Mobile® version 5.0 software, to which they added the sign inventory software.

As a first step, Pertzsch asked for a team to volunteer to test the new units. He trained the field workers on the new hardware and software for 15 minutes, and then sent them on a typical sign inspection route. In the field, the street maintenance workers

THE EQUIPMENT USED ON THIS PROJECT INCLUDES

- Juno ST handheld
- Cart&Graph mobileSIGNview

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recorded the location of the signs on the route, as well as the condition of each sign, directly onto the handheld computer.

At the end of the day, the field workers returned to the office, where they synched the Juno ST handheld to a desktop computer and downloaded the information collected that day into the city's GIS.

"From day one, the device performed flawlessly," said Pertzsch. "The workers loved it, and we could see immediately that it was going to save us a lot of time, money, and paperwork."

At the end of the successful testing phase, the City of Golden implemented the new process among both of the city's street maintenance teams. Now, because the signs' spatial coordinates are stored in the handheld, workers can scroll through the software to the appropriate sign, and using a series of pull-down menus and fields complete each inspection in a matter of minutes.

Back in the office, the data is once again downloaded into the city's GIS, where workers can easily analyze which signs need to be replaced as well as more accurately budget for repair and replacement costs.

"Instead of the 10 minutes it used to take to fill out the paperwork for each sign, we are now spending an average of three minutes on each sign," said Pertzsch. "To inspect every sign on a stretch of 10 city blocks used to take two workers two days to complete. Now, one person can do the same work in eight hours. On just that one stretch of street, we're able to save more than 10 man hours."

The increased efficiency means the City of Golden has been able to improve its



asset management efforts significantly. In the past, the city only had the capacity to inspect regulatory signs such as stop signs, yield signs, and other critical signs annually, inspecting all other signs once every three years. Now, the city can inspect its entire inventory of signs each year and perform more regular repair and maintenance.

"It's amazing how well our street maintenance workers have embraced the use of this technology because of the amount of time it saves them," said Pertzsch. "Using handheld computers has been a real paradigm shift for us. These guys used to be a little skittish about using technology, and now they're looking for ways to make it even more efficient and are eager to make suggestions and provide feedback."

As a next step, the City of Golden hopes to equip its repair crews with Juno ST handheld units and to issue electronic work orders. The city also hopes to implement an electronic system for managing its other assets, such as fire hydrants, storm inlets, and manholes.

"The goal for us is to be completely paperless, from inspections to work orders for all of our assets," said Pertzsch. "Because of new technologies that are so affordable and easy to use, we're well on our way."

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