



## Bar Code Labels Stand the Test of Time on Signs in Kitsap County

There are approximately 18,000 road signs to guide drivers through Kitsap County, Wash., which covers 396 scenic square miles on the Puget Sound. To properly track and maintain each one of those signs, Kitsap County had to manually enter sign inventory data and maintenance records into a database - an extremely time consuming and error-prone task

"The staff were spending an hour or more per day in the shop looking up information and transcribing what they had done in the field onto an electronic spreadsheet," said Jeff Shea, a Kitsap County traffic engineer. "Weekly checks indicated that numbers were being transposed and sign information was getting incorrectly documented. With some 18,000 signs, it was imperative that we got a handle on correctly identifying the correct sign with the correct action." Shea faced several challenges in finding a less labour-intensive solution: identifying the appropriate application software; sourcing durable mobile computers that could operate in harsh weather conditions; and determining a way to permanently identify signs. To top it off, the solution also had to be easy to use and affordable.

Shea turned to POSDATA, a national systems integrator with headquarters in nearby Gig Harbor, Wash., that was capable of presenting various technology options.

POSDATA recommended SignTrack, its sign inventory and maintenance software system, and a durable labelling solution from Zebra Technologies that operates on easy-to-use Phaser mobile bar code scanning terminals from Symbol Technologies. This solution would lead Kitsap to become what is believed to be the first county road department in the nation to use handheld terminals and bar codes to manage road signs.

SignTrack includes lookup tables that road crews use to access and update records of sign condition, vandalism, maintenance, and location placement. Data is collected through a convenient user interface and stored in a Microsoft Access database. Data is transferred from the mobile terminals through a cradle connected to a PC running the host version of SignTrack, which updates the county's full sign database in Access. SignTrack also can alert users when signs are scheduled for replacement, calculate upcoming sign needs, and generate numerous reports about work crew activity, sign conditions, maintenance trends, inventory and more.

Bar coding provided the best solution to effectively and accurately enter data into the program, but the label material had to last for the expected five-year lifespan of the signs, which are exposed to the harsh weather conditions in the Pacific Northwest. After testing materials for six months, Genuine Zebra labels were selected for their readability and durability.

"One of the biggest concerns we had was the label falling off the sign," said Shea. "So we tested labels in what we thought was our most challenging environment - on a road by the Puget Sound where they would be exposed to corrosive sea air. A year later the Zebra label is still great."

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### Solution Technology

Z Series™

Z-Ultimate 3000

Phaser scanning terminal from Symbol Technologies



The county produces its bar code labels on Z-Ultimate 3000 white label stock from Zebra Technologies, which is a polyester material with an acrylic-based adhesive for long-lasting readability and adhesion. The labels are printed with a rugged Zebra Z Series thermal-transfer printer with a 300 dpi resolution printhead.

"Printing is done indoors at a county garage facility, but the doors are open a lot and the printers are exposed to dirt, dust and a lot of different things.

There is absolutely nothing clean about this environment," said Kay Groves, the POSDATA account manager who worked with Kitsap County to implement the program. "I've been selling Zebra printers since the early 90s. For this application, there is no question they were the best choice because of their durability."

The Z Series printer, which has a 32-bit processor and can print up to 10 inches per second, often prints large batches of labels after receiving print jobs from the PC. "The Z Series performs great," said Groves. "It accepts some very large files and processes them with no problem and without slowing down." The printer has a durable metal casing and is connected to a PC that holds the county road database and custom label design software.

"Once the printer was set up it started running without any problems, and we even set it up ourselves," said Shea. "Bar codes and lettering are clean, there is no wasted label material, and it has been extremely easy to use."

The labels are placed on the back of road signs and on a corner of street signs. Each label has an 11-digit serial number encoded with a Code 128 bar code and printed in text that uniquely identifies each sign and its location. The serial number includes a five-digit road identification code used in several county applications, a four-digit mile code that describes where the sign is located on the road, a digit to indicate which side of the road the sign belongs on, and a sequence number that differentiates each sign if multiples are posted at the same location.

Bar codes labels are now being applied to all new signs, and all existing signs will eventually be labelled. There are five road crews who perform sign installation, maintenance, and other duties. One person in each crew has a Symbol Phaser portable data collection terminal with integrated bar code scanner, which runs the field version of SignTrack software.

Workers record all activity performed by scanning the sign label, then following the prompts and menus on the mobile terminal screen. There are 14 common sign activities pre-programmed into the terminals, so users can quickly enter job codes from a menu. Prompts and checks help prevent incorrect information from entering the system.

"With this system, the technician identifies the sign and inputs it once," said Shea. "Bar code labels are key to this program. The bar codes increase the accuracy and integrity of data in the system."

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Typical entries include the work performed and type of retro-reflective material used on the sign. Activity reports were previously hand written in the field, and then submitted to Shea to read and enter into the database. Shea spent an average of three to four hours per week checking report data and entering it into his Access database. The SignTrack software on the Symbol Phasers also uses Access, so now information from the five mobile terminals is easily downloaded into the host database. "Now we download each Phaser once a week and the process takes two to three minutes per terminal," said Shea. "I am extremely happy with the process. We pull a weekly report to review with the road crews, and we can also tie the data into our inventory and GIS (geographical information system) applications."

The data entry that used to require at least three hours per week now is completed within 15 minutes—a 92 percent time savings. The resulting information is also more accurate and saves additional time in the field. "Not having to look up the numbers will allow the technician to get to more signs in a day," said Shea.

The time-savings and ease-of-use helped the system gain rapid acceptance by Kitsap County road crews. "The system is very easy to use and within a day everyone had pretty much jumped on board with it. The workers like it because it saves them data entry time," said Shea. "We had very few glitches and couldn't have had an easier implementation."

The success may extend beyond the county's borders. Representatives from other counties have visited Kitsap to see demonstrations and to learn more about the system. Several other counties may implement their own versions soon.

