Interview with Mike McKeel and Larry Regarding Johnston County Smartzone Deployment

Rob Bushman October 23 2003

There was skepticism at first when this project was discussed. It was feared that there would be no benefit from the system, and that it would be difficult to manage and maneuver, and that it would get in the way of completing the project.

The most important thing from a construction workers perspective is to slow drivers down and reduce the amount of accidents as drivers approach the end of a queue. To do this, signing that is relevant will get the desired reactions. During this project there were no traffic fatalities, when a project of this size and duration would have been expected to have 1 or 2. Although no hard numbers are available, it was felt that the number and severity of crashes were reduced.

There were accuracy issues noted, not because of the operation of the system but because of the logistics of the operation. The project was fast moving which meant frequent moves of the lane closure. With the technical support available, it was not possible to relocate the system quickly enough to keep up with the moving operation. One solution would be to increase the number of sensors in the system so that the entire stretch where closures are taking place is covered. As the work moves, the trailers would already be in position. This would also address another issue. The lane closure could be 2-3 miles long. If the workers were at the downstream end of the closure, queuing might begin there. Several miles of backup could go undetected since the first sensor trailer was located at the taper. The system was adjusted to react more quickly and respond even to a slow down at the taper area. Care should be taken to make sure that times shown on the signs are as accurate as possible (update every minute) and that an upstream sign does not show a time later than a downstream sign.

There were too many initial bugs in the system which took several weeks to work out. Liquidated damages after a short initialization period were suggested. This is not a problem specific only to IRD. Also, at start up the sign times were not based on the correct time zone.

Sharing a technician between two projects was not practical, since many of the needs occurred at the same time, particularly relocating the system at the end of the week to be ready for the beginning of next week.

Administering the project as a State contract through Raleigh rather than as a purchase order through the division would assist in managing the invoicing and payment, as Raleigh is better equipped for processing and payment. The pay scheme and requirements should be set out more clearly in the contract, such as how many days and which days are payable for web-site operation and technician support.

Having the Smartzone system as a separate contract not included in the prime contract for road work created some management issues. The prime contractor had no interest in the success of the Smartzone system and may have perceived it as an inconvenience that got in the way of his progress on the project. If it was part of his contract, he would have a vested interest in ensuring that the system was relocated and operational in a timely manner and would ensure proper communication to this end.

Spare message boards, or at least spare key parts, available on site would be helpful in reducing down time due to vandalism or lightning strikes. Vandalism problems were less than anticipated.

There is a need to be able to edit and display over-ride messages on the boards in a very quick manner. It was not clear how this could be achieved when the technician was not available, so the system was sometimes turned off. Pagers were not found useful in their current form as they went off too frequently. They would be helpful if they provided information only on significant conditions such as complete failure of a sign or extreme backups occurring.

Before deploying, the location and setting needs to be considered. Johnston County is a semi-urban setting and a back-up on the freeway very quickly impacts the surrounding street network. However, drivers on the freeway have more options to escape from queues since exits are much more frequent. In Nash County, a rural setting, exits are 4 to 6 miles apart so once driver's get in the queue there are no more options for escape.

Local traffic was observed to make good use of the system and quickly responded to delay messages to seek alternate routes. Commercial vehicles also reacted well to the presence of the system. Drivers were most responsive when there was a delay message and they could actually physically see the queue. The increased number of message boards and their relevance to the current situation increased the awareness with drivers more than static signing.

Cameras would have been helpful in monitoring current conditions at the site. The ability to integrate and communicate with the State-wide system, including freeway message signs, would be helpful during severe back-up conditions. Also, a simple and easy way for the on-site inspector to control sign messages under special circumstances would be helpful.