

Session Nine

Operations and Maintenance: Keeping ITMS Working

Joseph M. McDermott, Illinois Department of Transportation — presiding

Los Angeles Experience

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Mr. Nordby is in charge of the ATSAC Operations Division in the Los Angeles Department of Transportation. He provided an overview of the signal systems maintenance program in Los Angeles, and the significant changes that have been made as a result of the ATSAC system. The major points of his presentation are summarized below.

- Up to the 1970s, the situation in Los Angeles was very similar to most other cities. There was a mixture of different traffic controllers in the system, which required a large inventory of spares and equipment for maintenance. Furthermore, the signal system was interconnected using several types of communications. All of that equipment was maintained by electricians, and they appeared to be fairly successful at keeping the system in operation.
- In 1976, there was an attempt to conduct a TRANSYT study of the downtown signal system. They found that the signal equipment could not be kept operating well enough to perform the study. Each day they would discover new failures that had to be repaired.
- That experience led to a signal reliability study in the late 1970s. Many systems within the city were surveyed, and they discovered that 24 percent of the traffic signals had some sort of failure that was affecting traffic flow continuously. Even after a significant amount of diligence by the maintenance supervisors, the failure rate remained at about 24 percent.
- In the late 1970s, the city also decided to standardize its signal systems with Type 170 controllers. There was an aggressive program to replace the other controllers, which eliminated the need for a large inventory of spare parts for different types of equipment. After a little hesitation, the electricians seemed to accept the standardization with 170s.
- The first installations of the ATSAC system coincided with the 1984 Olympics in Los Angeles. It worked very well, and large-scale implementation of ATSAC was approved. The ATSAC system involved a lot of new technologies that the maintenance personnel had never worked with before, including fiber optics, digital multiplexing, and video surveillance. Many of the older technicians resisted the new technology, which is not an uncommon problem.
- As a result, it was necessary to create a special maintenance group that did nothing but work with the new technologies. These technicians are responsible for the initial turn-on of the systems, they resolve any integration problems that arise, and they do training within each of the regional maintenance groups.
- Once it came on-line, the ATSAC system exposed that constant problem of a 24 percent failure rate in the signals. The automated system is very intolerant of any faults out in the field—whenever a problem was detected, the system operators were alerted immediately. This led to a significant increase in the number of maintenance calls, particularly for intermittent problems that were difficult to detect previously.
- The new system incorporates a significant amount of surveillance, which places an

additional burden on the maintenance activities. In particular, there is an entire network of system detectors in addition to the loop detectors at each intersection. This was complicated by another city program to resurface the streets, destroying some of the newly installed detectors.

- All of these problems associated with the new system have forced the department to reexamine its maintenance program from a top-down view. They are attempting to reorganize their maintenance structure by looking at two things: the fundamental maintenance requirements of each piece of hardware, and the skills needed to perform that maintenance. The intention is to compare those needs with the existing maintenance organization, and restructure the organization accordingly. This will also reveal any holes in the future maintenance program that need to be filled.
- They are also addressing the problems associated with the need for special groups of technicians for the new systems. There has been an effort to establish a new class of maintenance personnel, with a pay bonus to compensate for the additional skills that are necessary.
- Because of the serious budget problems in the city, a lot of maintenance work is being contracted out. All of the advanced, technical maintenance is still done by the city personnel, but contracts are being let for other work. One potential solution to the financing problem is the federal funds that may soon be available for operations and maintenance activities.

Mr. Nordby concluded by noting that many automated systems around the country will be facing these same maintenance issues in the coming years. Although the current emphasis seems to be on system implementation, after a short period it will shift to the day-to-day concerns of operations and maintenance.

INFORM Operations and Maintenance

David C. Powell

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The New York State Department of Transportation has implemented an integrated traffic management system on Long Island called INFORM. In his presentation, Mr. Powell discussed five important elements needed to keep a system like INFORM operational. His comments about each of those items are summarized below.

- Funding for operations and maintenance is the most important issue. Most transportation agencies are not accustomed to projects that have annual cost for operations and maintenance that equal approximately 10 percent of the constructed cost, particularly in the period immediately after implementation. Funding for capital costs is relatively easy to obtain. On the other hand, operations and maintenance funding is unpredictable and difficult for most agencies to secure.
- Upper-level management support within the agency is another important issue. When the INFORM project was about to go on-line, the department officials were unfamiliar with many of the system components and became concerned about some of the promises being made. They were reassured once they had the opportunity to meet with people involved in other successful systems.
- The state has used a different approach for meeting the staffing needs of the INFORM system. The private sector has been relied upon for a significant amount of the work. This approach is expected to continue. The project involved a collection of entirely new technologies, and the state did not possess the necessary skills to maintain them. Thus, it was always assumed that the maintenance work would be done by a contractor. There is also a consultant for the operation of INFORM. The initial plan was to phase-out