

### Summary

The I-75 traffic surveillance and control system has operated successfully in the automatic mode for several years. The system demonstrates the value of the use of "real time" on-freeway congestion and incident detection and control through automatic traffic diversion to exit ramps and alternate routes by the use of changeable message signs.

The electronic technology and hardware comprising the system provides a "building block" approach for future actions without fundamental changes in the Central Control Station, or either of the computers. It will be possible to expand the system to operate additional changeable message signs further north on I-75, and also on I-71. Some entrance ramps on the Cincinnati freeway system must be controlled or metered in the future to assure good freeway system operation.

Most of the traffic congestion problems reported in our area are resulting from accidents, stalled vehicles, fire and other emergency equipment responses, and other incidents, rather than being caused by actual capacity deficiencies in the roadway system. If we are to provide safe and convenient peak-hour operation on our street and highway systems, our greatest future opportunities will be in more quickly detecting incidents of the types just mentioned, dispatching assistance to clear those problems, and communicating more effectively with motorists how to avoid them.

### ORGANIZATIONAL PLANNING FOR TRAFFIC MANAGEMENT ACTIVITIES

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Every day, the flow of traffic on our freeways and streets is slowed as the result of incidents -- everything from vehicle stalls, flat tires, spilled loads, accidents, major events with large crowds, to maintenance and construction activities. And every day, the resulting congestion and additional accidents are costing the traveling public millions of dollars. During one calendar year in the Los Angeles region, there were 220 incidents that cause major blockages of freeway lanes. Delays and secondary accidents are costing Los Angeles freeway drivers a staggering \$60 million each year! Clearly, it's a problem that demands attention.

Yet, in many areas, little or nothing is being done to deal with the problem. In fact, there seems to be an attitude that this is just one of those things that must be accepted and about which little can be done. Such is not the case -- plenty can be done.

Analysis of delays caused by accidents or other lane blockages in Los Angeles revealed the critical nature of the time required to remove the obstruction and restore full roadway capacity. During off-peak hours, each additional minute taken to correct the problem extends the duration of congestion by four or five minutes. In peak periods, this factor often soars to fifty to one, or more.

Clearly, any program to deal with the problem should focus on cutting this total time -- the time to detect that a problem has occurred, the time to move forces into the field to deal with the problem, the time to make decisions and implement

diversion routes, the time to clear obstructions and restore capacity, the time to make necessary repairs to the roadway, and the time to dissipate congestion and return traffic flows to normal.

An effective program to manage incidents costs money: personnel costs, training costs, and equipment costs. But you can expect the resulting savings in delays and in related secondary accidents will far exceed those costs. Based on over ten years' experience in the Los Angeles District, Caltrans has seen a 5:1 or 6:1 benefit/cost ratio. Last year, Caltrans' cost for the response team program was about \$85,000; of that amount, over \$30,000 has been recovered from those parties who caused the accidents. During the same period, savings to the public resulting from reduced delays totalled over \$550,000. The resultant benefit/cost ratio was about 10:1.

An incident management program cannot be truly successful unless there is a cooperative, coordinated attitude on the part of each of the agencies involved. The working relationship between the traffic engineering, maintenance, and enforcement organizations is particularly critical. All have a legitimate responsibility and authority at an accident scene; all have resources to help correct the situation and get traffic flowing normally again. Local agencies need to be included, too -- detoured traffic will frequently be operating on city streets. A host of other authorities also will be involved: fire departments, tow truck services, ambulance services, etc. The key is to meet together before an emergency and to plan how each agency can coordinate its necessary work with that of the other members of the team, all working toward a common goal. And keep in mind, from a traffic flow point of view, the goal is to get traffic back to normal as quickly as possible.

Invariably, with this kind of informal multi-disciplinary team, the question will come up: "Who's in charge?" In Los Angeles, our answer is that no one agency is in charge; consensus decisions are made by the team. This may fly in the face of some organizational theorists, but in the real world, it works well.

The Caltrans' incident response teams in Los Angeles are comprised of about two dozen volunteers, all with a traffic engineering background and all of whom have other regularly assigned duties in the Traffic Operations functions. Teams operate similarly to a volunteer fire department -- members take equipment (vehicles, sign trucks, signs, flares) home with them, are on call 24 hours a day, and go into action whenever an incident blocks two or more freeway lanes for two or more hours. Team personnel, along with police, maintenance, and other emergency personnel meet at the incident site and actively manage the situations. Providing help for the injured, clearing the wreckage, repairing damaged facilities, detouring traffic, and keeping the public informed of the situation are all carried out in a coordinated manner.

In metropolitan areas freeways are becoming more clogged with traffic. In turn, lane-blocking incidents are increasing and delays and secondary accidents are becoming increasingly critical. The consequences of these problems can be reduced significantly using proven incident management techniques. So to do anything less is to simply surrender to the problems.