

# Mainstreaming Incident Management in Design-Build: The T-REX Experience

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## Abstract

The Colorado Department of Transportation (CDOT) initiated a design-build project on I-25 and I-225 in the Denver metro area in June 2001. The Transportation Reconstruction and Expansion (T-REX) Project is a five-year, \$1.6 billion project that includes complete reconstruction of 17 miles of interstate and the construction of a light rail line. One of the contract requirements for the project was the development of a traffic incident management program prior to the start of construction.

The traffic incident management program development process included a coordinated effort among transportation engineering, highway maintenance, fire/rescue, emergency medical services, law enforcement, the contractor, and other response and support agencies. Approximately 170 individuals participated in the planning process, which was designed to maximize the involvement of each of the agencies and focus on construction concerns as well as long-term traffic incident management in the project area.

This paper presents the planning process, the approaches used to work with multiple agencies and disciplines, and the resulting program. It discusses how traffic incident management helped drive the design and implementation of numerous operational and ITS features in the design and construction of the T-REX project and identifies issues associated with implementation and mainstreaming within the context of design-build.

## The Planning Process

Southeast Corridor Constructors (SECC), the design-build entity contracted by CDOT for the project, facilitated a multi-agency, multi-disciplinary planning process to develop a recommended traffic incident management program for the T-REX project. The process involved approximately 50 agencies and organizations. The SECC contract required that initial program development be completed within the first 120 days following notice-to-proceed;



therefore, the schedule for program development was aggressive, with agency representatives meeting from the end of June through early October 2001.

The program development process used a three-tiered approach to involve affected agencies and ensure their issues were identified and addressed. Three groups met to develop the program:

- Stakeholders
- Steering Committee
- Action Groups

At the first stakeholder meeting, SECC presented an overview of existing traffic incident management programs in the project area and the program development process proposed for the T-REX project. Stakeholders were asked to identify concerns with traffic incident management during the T-REX project and their long-term goals for the program. The stakeholder group was made up of all interested and affected agencies and they were kept informed throughout program development with update reports in the form of short newsletters.

Approximately 120 individuals were included in the Steering Committee. This group focused on overall strategy, including development of program goals, objectives and incident levels. The Steering Committee reviewed recommendations from the Action Groups and finalized the initial T-REX Incident Response Manual.

The Steering Committee developed the following goals for the T-REX Traffic Incident Management Program:

- Enhance safety of incident area
- Reduce incident related delay on I-25 and I-225
- Minimize impacts of I-25 and I-225 incidents on the secondary system
- Reduce the cost of incidents
- Provide timely, accurate information to motorists
- Secure public and private sector cooperation implementing incident management activities

These goals and associated objectives were used to evaluate potential strategies and develop recommendations through each of the Action Groups.

Four Action Groups, each composed of 35 to 70 agency representatives, met to evaluate and recommend strategies. The four Action Groups were:

- Command and Communication
- Alternate Routes
- Technology and Resources
- Media and Public Information

Each Action Group focused on strategies that addressed specific aspects of traffic incident management within their areas of operations and expertise. The Action Groups met four times each from July through September 2001. Their recommendations provided the basis for the final program recommendations and the T-REX Incident Response Manual.

The Steering Committee and four Action Groups reviewed and evaluated a wide range of strategies to address key aspects of traffic incident management:

- Detection and verification
- Response
- Scene management
- Clearance
- Motorist information

A list of strategies was reviewed to identify those that the Steering Committee and Action Groups felt should be evaluated for use in the T-REX Traffic Incident Management Program. Each strategy was assigned to an Action Group based on the functional expertise of the group. These strategies provided the basis of the Action Group Recommendations.

### **The Program**

The planning process resulted in specific strategies for improving detection, response, clearance and scene management on incidents in the T-REX project area.

The Command and Communications Action Group represented those agencies who function in a command capacity on traffic accidents on I-25 and I-225 and those who provide communications among and between those agencies. The specific recommendations developed by the Action Group focused on enhancing current procedures and addressing concerns with potential impacts from T-REX construction. These included the promotion of the Colorado state statute that requires drivers of vehicles involved in an accident on divided highways to move them off the traveled way if they determine that there are no injuries or alcohol involved in the incident and the vehicle can be safely driven. Service patrols were required under the initial contract and specific operation recommendations were developed for these patrols.

The Command and Communications participants also recommended development of procedures for review and notification of traffic control changes to meet the needs of response agencies and that interagency training be developed for use at agency roll calls and in-house trainings. Other recommendations focused on on-scene procedures and preplan information to be included in the incident response manual provided to all response agencies. Communication and notification procedures were recommended that expanded existing systems and provided new ones. One of the new systems recommended was an Incident Information Management System (IIMS), intended to provide information to response agencies on incidents detected and monitored in the project area.

The Alternate Routes Action Group developed alternate routes for use on incidents in the project areas. The alternate routes are intended for use only when impact to the highway requires complete closure or extensively closes lanes for two or more hours. This group also compiled

information on facility locations, such as fire stations and hospitals, that would be impacted by the implementation of alternate routes.

The Technology and Resources Action Group worked with the proposed alternate routes to recommend locations for a variety of ITS devices, including closed circuit television, variable message signs, and highway advisory radios to support detection, response and the implementation of alternate routes. They also compiled information on resources for inclusion in the response manual for on-scene management.

A critical component of effective traffic incident management is public information and notification of incidents to allow motorists to make informed decisions about their travel plans. The Media and Public Information Action Group considered a number of traveler information and public education strategies. This action group recommended the use of public education campaigns, media packets to inform the media of key aspects of the program, mass faxes to key recipients based on the nature of the incidents, a project website and the use of telephone information lines.

### **Incorporating the Program in Project Design and Construction**

During the development of design elements for ongoing construction activities, an emphasis will be made during the review process to ensure that traffic issues are incorporated. Items that will be considered include:

- Freeway access and egress points for emergency vehicles
- Emergency and accident investigation pull-off points
- Phasing coordination to evaluate alternate route conflicts
- Physical design elements that tie new system into existing system
- Process for monitoring traffic movements with phase changes or detour routes
- Ongoing development of ITS components and applicability to traffic incident management
- Consistency with other adjacent traffic incident management plans

To ensure that the design elements are incorporated as required to provide for effective traffic incident management after construction, the following measures will take place:

- Final design will be consistent with federal and state standards and guidelines
- Design will be monitored as detailed in the Design Quality Management Program
- Construction will be monitored through the Construction Quality Management Program to ensure that the product is consistent with the design and being constructed according to Project standards
- Incorporation of consistency with adjacent municipal and other agency systems will be maintained
- ITS elements will meet or exceed the requirements of the contract

The initial step to implementation was the distribution of the T-REX Incident Response Manual to all response agencies in the corridor. This will be supported by agency training to ensure that response personnel in the field are familiar with the use of the manual. SECC will install the

recommended ITS devices that support the T-REX Traffic Incident Management Program and initiate the communication and coordination efforts outlined above. Several of the recommendations require time to implement while others were initiated immediately.

It was the intent of the program to be dynamic and responsive to the needs of the affected agencies. Continued coordination and program revisions were recommended through regularly scheduled meetings, updated information provided by involved agencies and regular review of proposed traffic control and construction phasing plans. Successful implementation will require a commitment on the part of all agencies to the program and a commitment on the part of SECC to provide program leadership.

### **Issues Associated with Design-Build**

Traffic incident management programs provide a significant return on investment in terms of safety, system reliability, and reduced traveler delay. Mainstreaming traffic incident management through project design and construction offers an opportunity to reduce the cost of implementation in terms of capital investment in ITS devices and other improvements built to enhance traffic incident management, and to reduce the impact of the construction itself. Despite the significant potential of building traffic incident management into new projects, there are considerable challenges to implementing an effective program through design-build.

The priorities of design-build teams and those of the facility owner/operators are not necessarily aligned when it comes to ensuring the success of traffic incident management. Construction priorities generally focus on schedule and budget, and unless the contractor is convinced that an effective traffic incident management will support these priorities, they may be resistant to spending funds on such a program. Reducing impacts to the public, while an important public relations tactic, one that is near and dear to the facility owner, generally has less obvious impact on either the project schedule or bottom line. Therefore, it is important that the commitment to traffic incident management be encouraged through contract documents and through management-level commitments to minimizing impacts to the traveling public.

Another obstacle to a strong contractor commitment to traffic incident management is the focus on capital costs versus the owner/operator's need to consider and minimize long-term operating costs. There are additional expenses associated with constructing traffic incident management improvements such as accident investigation sites, emergency pullouts, and emergency turnarounds. Expenses associated with ITS infrastructure and interconnectivity can create budget creep that most contractors will fight to maintain profit margins. These improvements are an essential part of a comprehensive traffic incident management program and should not be compromised for the sake of budget if there are budgetary concerns with these or any other aspect of the project.

Finally, the greatest challenge to the successful implementation of a program is the support and commitment of all affected responders and of the design-build team. Traffic incident management is a powerful tool for reducing the impacts of construction on the public and for the efficient long-term operations of a facility once constructed. Effective programs require champions within the design-build team and the various response agencies. This takes constant outreach and training of field personnel as well as continued recommitment by management staff. Potential cost savings to facility owner/operators, response agencies, and the general

public make it incumbent on transportation professionals to continue to pursue the implementation of traffic incident management programs through mainstreaming methods, including within design-build projects.

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