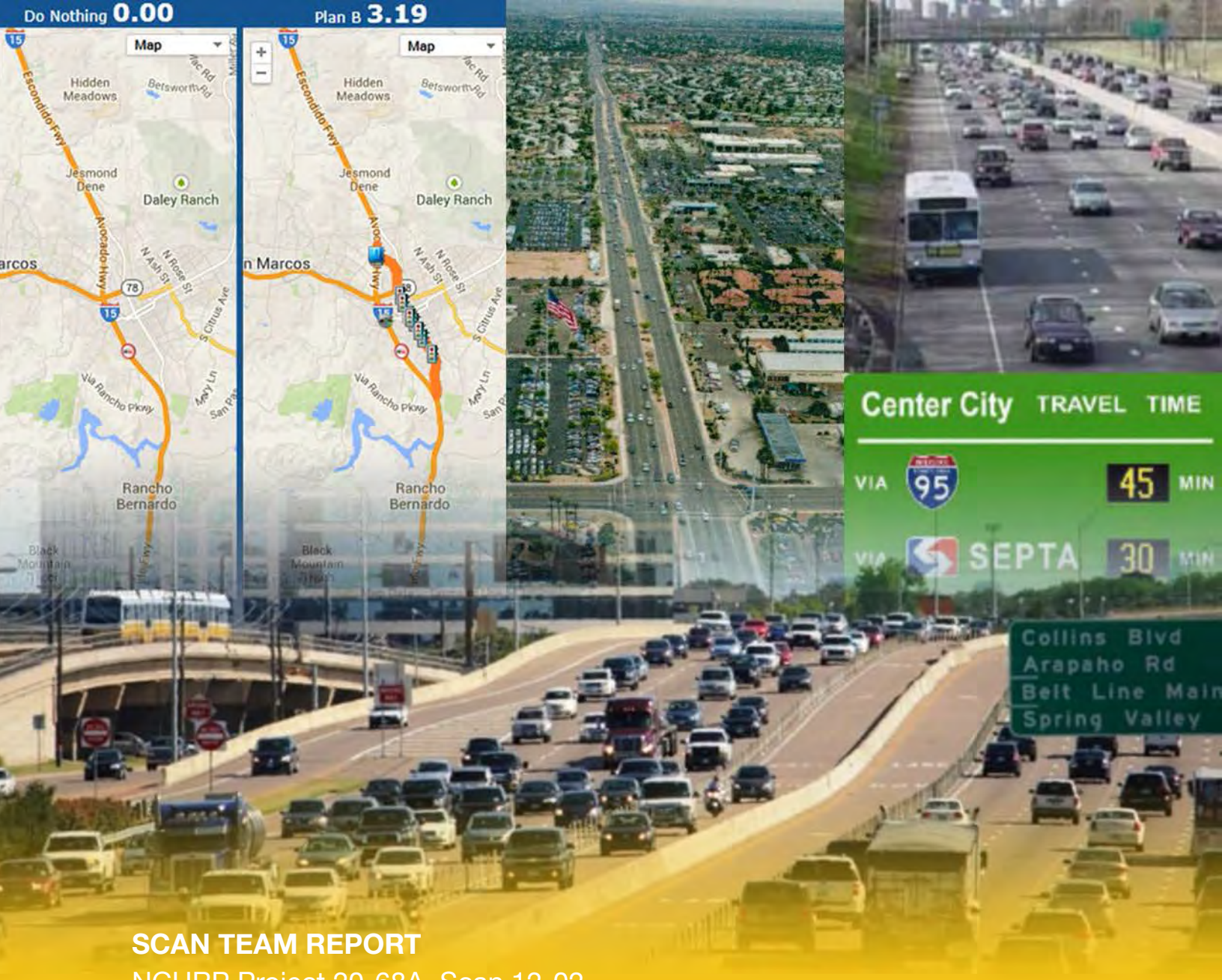

SCAN TEAM REPORT

NCHRP Project 20-68A, Scan 12-02

Advances In Strategies For Implementing Integrated Corridor Management (ICM)

Supported by the

National Cooperative Highway Research Program

Executive Summary

Many jurisdictions have implemented a variety of strategies for maximizing flow on facilities by using all available pavement and managing their facilities by using new technologies and better techniques. Most recognize the importance of interjurisdictional coordination with emergency responders, maintenance and incident response, and construction management, as well as providing timely notification to the public in managing their systems. Monitoring traffic operations through traffic management centers with reliable detection and surveillance and available deployment strategies (e.g., incident response) is an active engagement in reducing recurrent and nonrecurrent congestion.

Pulling this all together through Integrated Corridor Management (ICM) is essential to successful system management. ICM actively integrates the separate strategies (e.g., ramp metering, arterial coordination, detour planning, traveler information, managed lanes in a real-time manner, and new challenges in traffic management center staffing and funding.

The scan team visited five locations over two, one-week scans to review existing and planned ICM programs. The team asked the agencies to discuss the following, along with their ICM programs:

- What are best practices in staffing real-time corridor management?
  - Classifications, team assignments
  - Interjurisdictional staff sharing
  - After-hours staffing or call-out processes
- How are ICM projects and operations funded?
- What is the role (if any) of contracted services?
- What system-support staffing changes are needed?
- How can ICM technologies be most efficiently implemented?
- How are staffing issues addressed?
- Are certain functions outsourced?

Common Themes

The scan team identified several key attributes that regions need to implement for their ICM program to be successful: institutional integration, technical integration, and operational integration. The scan team found that these attributes have various levels of maturity at the sites visited.

Institutional Integration

An institutional partnership is needed among the operating agencies. The key areas required for ICM include:

- Agreements/memorandums of understanding/policies focused on joint operations and information sharing
- Identified funding or initial and sustained operations
- An identified champion
- Executive buy-in and commitment
- Documented organizational structure
- Defined roles and responsibilities
- Involvement of all modes and stakeholders in the corridor
- External and internal marketing, outreach, and education

Technical Integration

Intelligent Transportation System (ITS) infrastructure and technology are needed. The key areas required for ICM include:

- ITS infrastructure (existing or funding for new), to include field infrastructure for monitoring, information dissemination, and operations center systems (i.e., traffic management, traffic signal control, and transit management systems)
- Analytics/performance measures were available for analytics, modeling, travel information, and decision support systems
- Traveler information dissemination, including 511 systems, roadside devices, and feeds to the media
- ITS standards for easier integration of systems (e.g., regional ITS architecture, center-to-center, National Transportation Communications for ITS Protocol, and Traffic Management Data Dictionary)
- A common linear reference system to integrate multiple sources of data
- Various levels of a decision support system (i.e., a basic response plan book to full performance-based model used to generate responses)

Operational Integration

The agencies within the corridor need a cooperative operational mindset. The key areas required for ICM include:

- An interagency concept of operations defined and supported by all agencies
- Interagency data and information sharing
- Integrated transportation management center operations (multiagency/ multimode)
- Traffic incident management program/collaboration

Key Items for an ICM Program

Based on the desk scan's findings, the United States Department of Transportation's (U.S. DOT's) ICM program, and the scan tour, the scan team agreed on several key items that are needed for any area considering an ICM program.

Funding

The scan team found funding to be a major concern at all scan locations. Funding has been available for ICM planning and some deployment; however, in some areas, there is no commitment to sustainable funding for ongoing operations and maintenance.

Staffing

As with any new program, staffing requirements must be considered. Agencies have staffed ICM in a variety of ways. Many add ICM duties to existing staff members' responsibilities (e.g., existing Dallas Area Rapid Transit operations staff was given additional duties). However, the agency did fund one full-time equivalent to serve as the ICM coordinator for the US-75 corridor.

In general terms, operations have continued as part of the ongoing operational roles of the agencies involved. System support for ICM has been outsourced to private companies for the development and ongoing operation and maintenance of the software and hardware used for ICM programs. However, depending on staffing constraints, technical capabilities could be provided by any combination of public agencies and/or private companies. This should be considered a long-term commitment for an ICM program.

Champion or Lead Agency

Most ICM projects have had a champion or lead agency (hereafter, the terms and purpose are essentially interchangeable) to get the project started, funded, and driven toward deployment. This agency would typically be in a position to lobby its peers and/or offer its assistance in absorbing

the administrative duties necessary to serve as the nexus among the ICM agencies. In short, it can obligate sufficient staff and resources to help incubate the regional deployment.

The scan team found that a champion is necessary to induce progression toward ICM. While this role going forward remains desirable for purposes of regional identity, stability, and as a point of contact, it is not mandatory that it continue, at least not in that same capacity. Ideally, the program needs to get to a point where ICM becomes standard operating procedure and the agencies and relationships live on to provide the necessary momentum and support so that the program will continue under new leadership, even if the champion should leave.

As an example, the Phoenix area has a cooperative ITS organization, AZTech™[1], that began as part of the U.S. DOT's Model Deployment Initiative in the mid-1990s. Today, AZTech is still being used as the regional organization that cooperatively implements multijurisdictional ITS projects focused on operations, including ICM.

Lead Coordinator

This person or office is more or less the daily manager of operations overseeing the status of the daily ICM deployment and reviewing and inspecting the resultant response plans. An ICM deployment may or may not have a lead coordinator identified as such; however, by some measure, one person or one office from one of the member agencies is probably filling this role by rote. The lead coordinator is the person or office one calls to ask questions about ICM operation. This person may or may not be the champion previously described, or necessarily an employee of the lead agency.

The lead coordinator may retain prior job duties for his or her employer. It is probable, however, that those job duties (new or continuing) would naturally tailor to serve this purpose anyway, only now on behalf of the affiliated ICM agencies.

ICM Benefits

ICM provides benefits, no matter how simple or complex the program. A system that simply provides notification of events provides benefits. Interagency contact provides benefits by promoting understanding and enabling discussions of events that affect both agencies.

ICM Building Blocks

As part of this report, the scan team discussed the need to provide assistance to agencies thinking of starting an ICM program by providing an overview of program requirements. The scan team agreed that there are six basic areas that are needed to begin an ICM program:

1 What is AZTech™, http://www.AZTech.org/

- Coordinated operations (see Chapter 4)
- Multi-agency data sharing (see Chapter 5)
- Traveler information (see Chapter 6)
- Decision support system (see Chapter 7)
- Model of corridor (see Chapter 8)
- Memorandums of understanding (see Chapter 9)

Capability Maturity Model

This model, a tool for objectively reviewing business processes, is used extensively worldwide in government offices, commerce, industry, and software-development organizations. Within the transportation community, the Capability Maturity Model is used for evaluating the maturity of various ITS programs. U.S. DOT workshops have been held to help states identify areas for improvement for their Transportation Systems Management and Operation programs and for Intelligent Transportation System programs in general.