Planned Special Event Management Systems

TM 8

Photo: Courtesy of Neil Hetherington, WTI

Description: Many intelligent transportation system tools are useful for special events traffic planning. Planned special events like festivals or football games can bring in large crowds of people causing congestion, especially in rural areas. Traveler information systems (see #TTI4), dynamic message signs (DMS) (see #TTI3), highway advisory radio (HAR) (see #TTI1), 511, and social media (see #TTI5) sites can be used to inform the public of an upcoming event that may impact traffic, possible alternative transportation methods available, and alternative routes to use to avoid congestion. During the event, cameras, vehicle detection (see #TM5), or unmanned aerial systems (UAS) (see #ES6) can be used to monitor traffic conditions so that signal timings or law enforcement can be deployed to direct traffic efficiently.

Rural Transportation Critical Needs

- ☐ Crash Countermeasures
- ☐ Emergency Services
- ☐ Operations & Maintenance
- ☐ Rural Transit & Mobility
- ☐ Surface Transportation & Weather
- ☐ Tourism & Travel Information
- ☑ Traffic Management

Issues Addressed

- ☐ Road geometry
- ☐ Railroad grade crossings
- ☑ Speed
- ☐ Intersection conflicts
- ☐ Animal conflicts
- ☐ Passing maneuvers
- ☐ Work zone conflicts and/or delays
- ☑ Weather related crashes
- ☐ Bike safety
- ☐ Pedestrian safety

Strategies Achieved

- ☑ Road User
- ☑ Road
- ☐ Vehicle
- ☐ Safety Culture
- ☑ Engineering
- ☐ Emergency Response
- ☑ Enforcement
- ☐ Education

Applicability	Partnerships	Key Components
•Any combination of Intelligent Transportation System (ITS) tools can be applied to special events in order to reduce congestion and frustration of the traveling public. The ITS tools used can be tailored to each individual event in order to keep costs low. In rural areas planned special events can have a greater impact on the surrounding transportation network. These tools can inform the public of an upcoming event in order to provide information on alternative routes or detours that can be used to avoid the area or to be prepared for congestion.	•Applications benefit from collaboration among numerous agencies, which may include: •Departments of Transportation (Federal, State, Local) •Law Enforcement •First Responders •Event Planners	•Any combination of these tools can be used for a special event. An agency should choose which tools to use based on the needs for each individual event. •Traveler Information Systems •Highway Advisory Radio •Dynamic Message Signs •Social Media •Cameras •Unmanned Aerial Systems (UAS) •Vehicle Detection

Examples of Implementation

- **Sturgis Motorcycle Rally Traveler Information Coordination**

The Sturgis Motorcycle Rally brings in over 400,000 participants to Sturgis, South Dakota. This event can cause congestion along I-90 across multiple states. South Dakota Department of Transportation (SDDOT), South Dakota Highway Patrol, Montana Department of Transportation (MDT), and Wyoming Department of Transportation (WYDOT) coordinated staff to post event information on state 511 websites, the North/West Passage website, as well as dynamic message signs along I-90 to alert the public of the upcoming event.

- **Montana State University Football Game Traffic**

The Western Transportation Institute conducted research on traffic congestion after Montana State University football games. HAR and DMS were used to communicate event information to the public. CCTV was used to monitor intersections to allow police to direct traffic when necessary, and signal timings were adjusted to increase traffic flow away from campus.

- **Purdue Football Commercial Cloud Navigation and Maps**

Purdue University implemented Google Maps to provide recommended navigation to their 26 parking lots for football games. These maps were provided to season pass holders and visitors using QR codes and via the university's website.

- **Washington State Fair**

The Washington State Fair is an annual 17-day event in Puyallup, Washington that can bring in more than one million people. Washington State Department of Transportation and Puyallup police monitor traffic during the Washington State Fair to adjust traffic flow. Portable DMS are placed on major highways and access points near the fairgrounds to direct non-fair traffic to less busy routes.

Implementation Considerations (Pro)
•Reduces traffic congestion from special events. •Increases non-motorized traffic safety. •Reduce travel time for event patrons. •Increases safety by reducing frustration of event participants. •Can increase communication among numerous agencies.

Implementation Considerations (Con)
•An agency must decide if it is willing to rent out or let an event organizer use ITS tools like DMS, which may result in damage. •Portable ITS tools are used for the highest priority need; an agency may plan on allowing an event organizer to use ITS tools, but something else could come up (wildfire, etc.) that will cause an agency to move the ITS tool to the higher priority need. •Some ITS tools can be cost prohibitive.

Opportunities for Future Expansion

- In the future, vehicle to infrastructure (V2I) communications could provide updates to drivers or public transit riders regarding the best route when there are road closures or congestion from special events. These alerts could also identify nearby available parking.

Additional Resources

- *Intelligent Transportation Systems for Planned Special Events: A Cross-Cutting Study*, found here: https://rosap.ntl.bts.gov/view/dot/3255
- *Managing Travel for Planning Special Events: First National Conference Proceedings*, found here: http://ops.fhwa.dot.gov/program_areas/conf1204/
- *MDT Special Events Planning Synthesis*, found here: https://www.mdt.mt.gov/other/webdata/external/research/docs/research_proj/special_event_traffic/Final_Report_May15.pdf
- *Traffic Management of Special Events in Small Communities*, found here: https://journals.sagepub.com/doi/10.3141/2099-10?icid=int.sj-abstract.similar-articles.2
- *Application of Travel Time Information for Traffic Management*, found here: https://rosap.ntl.bts.gov/view/dot/24756

Useful Tip

Using an existing integrated traveler information system or social media site to alert the public to an upcoming special event and traffic impact is a low-cost way to work to reduce congestion during the event.

Cost Range

(Cost/financial information, where noted, is based on 2016 dollars (unless otherwise specified). Cost/financial information is estimated, and will vary based on size and scope of project, number of units, etc. In general, capital costs include initial purchase costs of hardware, software, and other required equipment. Maintenance and operations costs include staff time to operate, monitor and maintain systems; data collection; system upgrades; evaluation; etc.)

Capital Costs: The total capital costs for this tool are low (less than $50,000) to higher (above $250,000). The costs will depend primarily on what types and combinations of ITS tools an agency wishes to deploy for a planned special event. Social media websites are free to use but will require trained personnel to post up-to-date event information. DMS cost about $2,500 per month per sign for rentals. Portable CCTV cameras are estimated to cost $21,107[1]. UAS used for traffic monitoring can range from $300 to $300,000 depending on an agency's needs. Traveler information systems are more expensive; costs can range from $120,000 to $2.4 million depending on the systems' functionality.

Operations Costs: The operations and maintenance costs for this tool are expected to be low (less than $50,000). These costs would include the costs to maintain any tools and to train personnel for use.

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