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MANAGING TRAVEL FOR PLANNED SPECIAL EVENTS



FINAL REPORT

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16. Abstract This handbook presents and recommends policies, regulations, planning and operations processes, impact mitigation strategies, equipment and personnel resources, and technology applications used in the advance planning, management, and monitoring of travel for planned special events. This handbook was written to assist responsible agencies in managing the ever-increasing number of planned special events impacting transportation system operations in rural, urban, and metropolitan areas. It communicates to a wide audience, assisting readers that possess the following backgrounds: (1) novice planned special event practitioner, (2) experienced planned special event practitioner, (3) local, single-jurisdiction event planning and management, (4) regional, multi-jurisdiction event planning and management.			
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INTRODUCTION

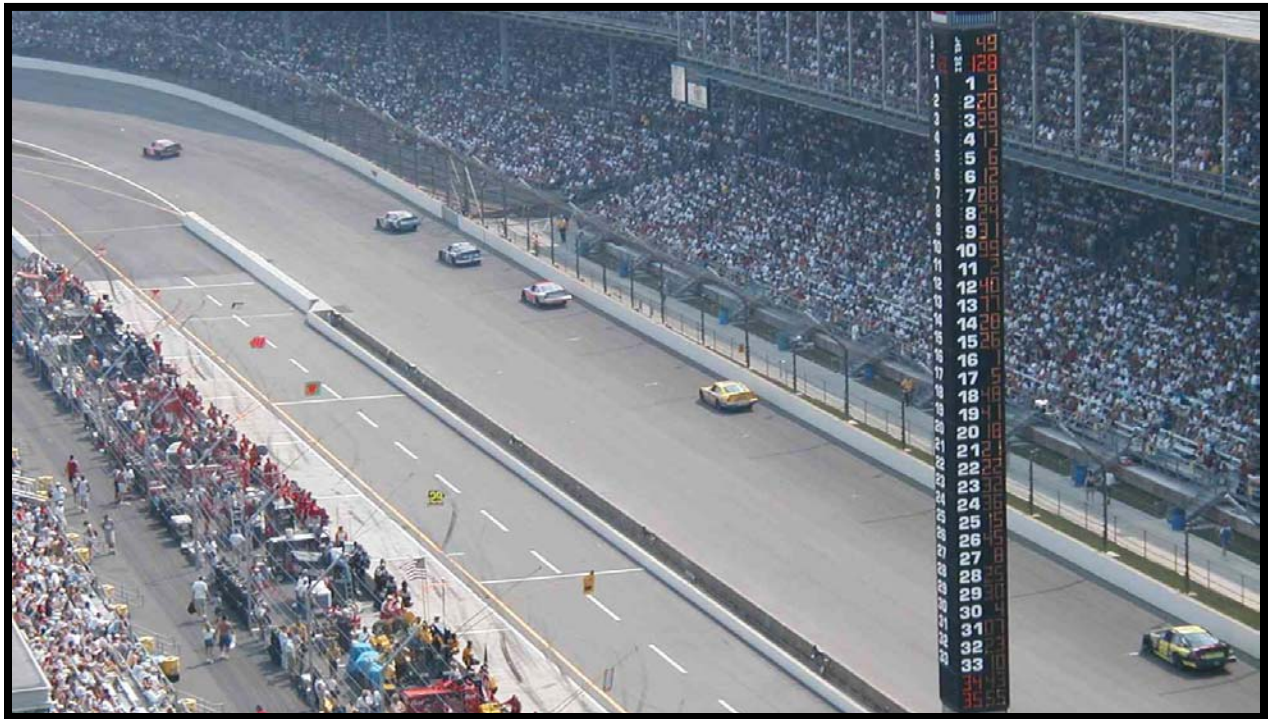


Figure i-1
Planned Special Event

PLANNED SPECIAL EVENTS

Planned special events include sporting events, concerts, festivals, and conventions occurring at permanent multi-use venues (e.g., arenas, stadiums, racetracks, fairgrounds, amphitheaters, convention centers, etc.). They also include less frequent public events such as parades, fireworks displays, bicycle races, sporting games, motorcycle rallies, seasonal festivals, and milestone celebrations at temporary venues.

The term *planned* special event is used to describe these activities because of their known locations, scheduled times of occurrence, and associated operating characteristics. Emergencies, such as a severe weather

event or other major catastrophe, represent special events that can induce extreme traffic demand under an evacuation condition. However, these events occur at random and with little or no advance warning, thus contrasting characteristics of planned special events.

A planned special event creates an increase in travel demand and may require road closures to stage the event. Planned special events generate trips, thus impacting overall transportation system operations. This includes freeway operations, arterial and other street operations, transit operations, and pedestrian flow. Unlike roadway construction activities or traffic incidents that constrain travel within a single corridor, planned special events affect travel in all corridors serving the event venue.

BACKGROUND

Planned special events pose a unique and diverse set of challenges to stakeholders charged with maintaining transportation system safety, mobility, and reliability. These challenges include:

- Managing intense travel demand
- Mitigating potential capacity constraints
- Influencing the utility associated with various travel choices
- Accommodating heavy pedestrian flow

Managing travel for planned special events encompasses both a local and regional level. The local level involves managing travel for one planned special event. The regional perspective concerns proactively improving travel management for all planned special events occurring in a region where, in most major U.S. metropolitan areas, hundreds of planned special events occur annually.

Table i-1 compares current state-of-the-practice activities to state-of-the-art activities in managing travel for planned special events.

Table i-1
Practice of Managing Travel for Planned Special Events

STATE-OF-THE-PRACTICE	STATE-OF-THE-ART
<i>Institutional</i>	
<ul style="list-style-type: none"> • Manage traffic and parking for planned special events. 	<ul style="list-style-type: none"> • Manage travel for planned special events by adopting an inter-modal approach and utilizing travel demand management strategies.
<ul style="list-style-type: none"> • Focus on traffic management team needs. 	<ul style="list-style-type: none"> • Form multidisciplinary stakeholder groups and solicit public input.
<ul style="list-style-type: none"> • Secure verbal coordination between stakeholders. 	<ul style="list-style-type: none"> • Develop a joint operations policy or mutual-aid agreement between stakeholders.
<ul style="list-style-type: none"> • Focus on single planned special events. 	<ul style="list-style-type: none"> • Create a committee on planned special events to monitor and plan travel management activities for all special events that occur within a region.
<i>Organizational</i>	
<ul style="list-style-type: none"> • Conduct periodic ad-hoc event planning. 	<ul style="list-style-type: none"> • Follow an established event operations planning process. • Develop standard street use event routes and traffic flow routes.
<ul style="list-style-type: none"> • Focus on event-specific planning and operations only. 	<ul style="list-style-type: none"> • Integrate event evaluation results into future planning activities to facilitate continuous improvement of transportation system performance.
<ul style="list-style-type: none"> • Obtain periodic participation and contribution from community interest and event support stakeholders. 	<ul style="list-style-type: none"> • Establish stakeholder groups specific to advance planning and day-of-event activities to strengthen stakeholder coordination and commitment.
<i>Technical</i>	
<ul style="list-style-type: none"> • Utilize fixed freeway and arterial management infrastructure to monitor and manage traffic during a planned special event.⁽¹⁾ 	<ul style="list-style-type: none"> • Utilize mobile devices:⁽¹⁾ <ul style="list-style-type: none"> ○ Portable traffic management systems (closed-circuit television, detectors, changeable message signs) ○ Portable traffic signals ○ Portable traffic management centers
<ul style="list-style-type: none"> • Conduct point traffic and parking management using field personnel 	<ul style="list-style-type: none"> • Deploy automated systems: <ul style="list-style-type: none"> ○ Parking management systems ○ Dynamic trailblazer signs ○ Lane control signs ○ Blank-out signs

The *state-of-the-practice* involves an *operations-based approach* that incorporates existing policies, procedures, and infrastructure applied under daily traffic management, incident management, and multi-modal management activities. In this approach, stakeholder planning activities parallel those for unplanned events, such as traffic incidents and emergencies, where various *what-if* scenarios shape response and management strategies. Stakeholders characteristically diverge from an interagency concept of operations and, instead, focus on the rapid mobilization and execution of planned agency-specific tasks.

However, incident management or emergency response experiences provide the opportunity to build on existing stakeholder relationships, although it must be recognized that stakeholder roles and priorities change considerably under planned special events. This technical reference will facilitate building a successful special event transportation management plan starting from a cornerstone of daily traffic, incident, and multi-modal management activities.

The *state-of-the-art* in managing travel for planned special events emphasizes a *program approach* specific to planned special events. This approach revolves around distinct, chronological phases relative to advance planning, management, and evaluation activities. Individual phases include interconnected strategies to assist stakeholders in identifying needs and resulting operations and service strategies tailored to the characteristics of a specific planned special event:

- Operations strategies include proactive control and management tactics, coupled with innovative technology applications, that effect changes in traffic and transit

operations to improve safety and reduce delay in addition to reducing field personnel requirements.

- Service strategies include policies and initiatives aimed at communicating advisory information and travel options to event patrons and non-attendee road users to reduce peak traffic demand levels on corridors serving an event venue, thus improving system travel mobility and reliability.

Collectively, these strategies meet the challenge of managing travel for planned special events on a *local level* or for a single planned special event. Stakeholders must predict travel demand and efficiently utilize the excess capacity of the roadway system, parking facilities, and transit. They must also reach out to all road users, communicate travel information, and offer attractive incentives to influence traveler behavior and decision-making.

Integration of phases, from post-event evaluation to advance planning for future planned special events, creates a seamless process allowing for continuous improvement of transportation system performance from one planned special event to the next. This iterative process, where stakeholders apply successes and lessons learned from a particular special event to future events, meets the challenge of managing travel for planned special events on a *regional level* or for all planned special events in a region.

The advance planning and management of travel for planned special events requires the consistent involvement and coordination of stakeholders within and across every event management phase. Stakeholders may have the opportunity to partner with new stakeholders across travel modes, disciplines, and jurisdictions. As a result, the state-of-the-art

includes forming multidisciplinary stakeholder groups assigned to carryout the objectives of a particular phase of managing travel for planned special events. This framework facilitates easy buy-in by agencies not involved in day-to-day transportation system operations and achieves better stakeholder consensus on group objectives.

PURPOSE

Given the dynamic characteristics of planned special events, the Federal Highway Administration (FHWA) Transportation Management Center Pooled-Fund Study (TMC PFS) recognized the need to identify operations planning and program issues, derive operational strategies and plans, and examine successful interagency cooperation and communication techniques specific to planned special events. In turn, the TMC PFS commissioned development of a technical reference document that provides direction, guidance, and recommended practices related to the proactive management of planned special events. It builds on the state-of-the-practice in managing travel for planned special events and strives to complement and advance the present capabilities of TMCs in addition to that of traffic management programs in metropolitan, urban, and rural areas.

This technical reference bridges the gap between the state-of-the-practice and state-of-the-art in managing travel for planned special events by providing both: (1) a framework for establishing a stakeholder coordinated and integrated planned special event management practice and (2) innovative techniques for enhancing the efficiency and applicability of current agency event-specific plans. This handbook presents and recommends various processes, operations strategies, service strategies, and technology applications that satisfy the special customer

requirements and stakeholder performance requirements driving planned special event travel management. It profiles numerous successful practices, highlighting proven policies, regulations, strategies, and resources used in the advance planning, management, and monitoring of travel for planned special events.

This handbook was written to assist responsible agencies in managing the ever-increasing number of planned special events impacting transportation system operations in rural, urban, and metropolitan areas. It communicates to a wide audience, assisting readers that possess the following backgrounds: (1) novice planned special event practitioner, (2) experienced planned special event practitioner, (3) local, single-jurisdiction event planning and management, (4) regional, multi-jurisdiction event planning and management. This technical reference facilitates easy extraction of guidelines, processes, operations strategies, service strategies, and associated tactics to meet the needs of transportation system operators. In turn, operators will gain an understanding of the keys to successful planned special event transportation management, as summarized in Table i-2.

Table i-2
Keys to Successful Management
of Planned Special Events

KEY EFFORTS
<ul style="list-style-type: none"> • Achieve early, constant input and participation of involved agencies. • Predict event-generated travel impacts on both a local and regional level. • Develop an integrated transportation management plan that can accommodate a range of traffic demands and other contingencies. • Ensure successful traffic management plan implementation. • Deploy a well-organized traffic management team equipped with the ability to communicate seamlessly between agencies.

Table i-2 (cont'd.)
Keys to Successful Management
of Planned Special Events

KEY EFFORTS
<ul style="list-style-type: none">• Conduct continuous traffic monitoring on the day-of-event and maintain protocol for modifying the traffic management plan to accommodate real-time traffic conditions.• Transfer event management successes into daily applications, and translate lessons learned into future event planning and operations needs.

REFERENCES

1. Jacobson, L., *Highway Traffic Operations and Freeway Management State-of-the-Practice White Paper*, Report No. FHWA-OP-03-076, Federal Highway Administration, Washington, D.C., March 2003, 43 pp.

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CHAPTER ONE BACKGROUND



Figure 1-1
Planned Special Event Patron Arrival

DEFINITION

A planned special event is a public activity, with a scheduled time and location, that impacts normal transportation system operations as a result of increased travel demand and/or reduced capacity attributed to event staging.

STATEMENT OF THE PROBLEM

Sources of Congestion

The public has become increasingly sensitive to the impact congestion has on *quality of life*, citing delays caused by traffic con-

gestion as their top community transportation concern in a recent National survey.⁽¹⁾ Congestion equates to decreased performance and, in turn, economic loss for businesses and trucking companies. Congestion either causes late deliveries or forces truckers to build additional travel time into their itineraries, particularly when making *just-in-time* deliveries.

Congestion simply refers to a condition where traffic demand *exceeds* roadway capacity. Capacity measures potential or the maximum, sustainable rate of traffic volume that can traverse a road segment. Congestion results from sudden, significant changes in (1) traffic demand or (2) available roadway capacity, both of which cause demand to exceed capacity. When this occurs, the

congestion is considered either *recurring* or *non-recurring* based on its causal factors:

- **Recurring congestion** is usually characterized by an increase in traffic demand. Commuter traffic induces congestion at the same time and location weekday after weekday; hence traffic managers can essentially predict when recurring congestion will happen. Recurring congestion reflects the daily, systematic relationship between peak traffic demand rates, inadequate road capacity, and sub-optimal operation of traffic control devices. The latter represents one of the few causes of recurring congestion that affects capacity rather than demand.
- **Non-recurring congestion** happens as a result of an event. The spatial and temporal characteristics, or location and

time of an event, may be known in advance, or the event may happen at random with very little or no warning. These events are commonly termed *planned* and *unplanned* events, respectively. Congestion causing events, whether planned or unplanned, result in either a reduction in roadway capacity, an increase in traffic demand, or both. Table 1-1 summarizes how these events impact roadway system operations.

A planned special event represents the only type of event that can generate an increase in traffic demand *and* cause a temporary reduction in roadway capacity because of event staging. For example, a parade or bicycle race may require street closures extending over a significant distance, and other events may warrant isolated road closures to accommodate pedestrian flow.

Table 1-1
Congestion Impacts of Planned and Unplanned Events

EVENT CATEGORY		EVENT-GENERATED IMPACT	
		TRAFFIC DEMAND	ROAD CAPACITY
Planned Event	Major roadway construction and maintenance	<ul style="list-style-type: none"> Increases background traffic demand on parallel freeways and arterials. 	<ul style="list-style-type: none"> Closes travel lane(s) or road segments.
	Planned special event	<ul style="list-style-type: none"> Generates new trips and increases traffic demand on all corridors serving the event. 	<ul style="list-style-type: none"> Closes travel lane(s) or road segments to stage event (typically street use events).
Unplanned Event	Traffic incident (e.g., crash, disablement, spilled load, debris)	<ul style="list-style-type: none"> Causes background traffic diversion to parallel freeways and streets. 	<ul style="list-style-type: none"> Blocks travel lane(s) or road segments.
	Emergency road work	<ul style="list-style-type: none"> Causes background traffic diversion to parallel freeways and streets. 	<ul style="list-style-type: none"> Blocks travel lane(s) or road segments.
	Adverse weather (e.g., snow, ice, fog, heavy rain, sun glare)	<ul style="list-style-type: none"> Decreases traffic demand (potentially). 	<ul style="list-style-type: none"> Reduces vehicle operating speeds and increases headways, thus reducing capacity.
	Emergency (e.g., severe weather, natural disaster, terrorism)	<ul style="list-style-type: none"> Causes evacuations that generate extreme traffic demand. 	<ul style="list-style-type: none"> Renders road segments impassable (potentially).

Impact of Planned Special Events

Planned special events can significantly impact *travel safety, mobility, and travel time reliability*. Mobility and reliability refer to the ease and consistency of travel, respectively. The scope of these impacts represent a function of several event operation characteristics, including attendance, rate of event patron arrival and departure, venue location, and adjacent roadway capacity. The effect and perceived magnitude of mobility and travel time reliability impacts vary by class of transportation system user. Table 1-2 lists the classes of transportation system users whose needs must be accommodated during a planned special event.

Transportation stakeholders place a priority on minimizing impacts to event patron and non-attendee road users and to transit users as well. Event patrons accept a certain level

of delay as part of the overall experience of attending an event, but place a high priority on getting to their destination prior to the event start.

Because planned special events are scheduled, transportation and other agencies attempt to influence the schedule to avoid conflict with recurring congestion. Some municipal codes prohibit special events requiring road closures at certain times of the day or week:

- For example, Section 447.50 of the Minneapolis Municipal Code states: *Downtown area restrictions. (a) No permit shall be granted for a parade/race to be conducted within the downtown area between the hours of 7:00 a.m. and 9:00 a.m. or 4:00 p.m. and 6:00 p.m. on any day which is not Saturday, Sunday, or a legal holiday.*

Table 1-2
Impacts on Transportation System Users

USER CLASS	USER TYPE	IMPACT ON USERS	USER RESPONSE
Event patron or participant	<ul style="list-style-type: none"> • Local resident • Visitor 	<ul style="list-style-type: none"> • Event patron demand may cause roadway system congestion. 	<ul style="list-style-type: none"> • Event patrons may use another mode of travel.
Non-attendee road user	<ul style="list-style-type: none"> • Local resident • Local business • Commuter • Trucker • Emergency services 	<ul style="list-style-type: none"> • Commuters and truckers may encounter reduced travel time reliability in corridors serving an event venue. • Special event traffic control strategies may impact local residents and businesses not involved with the event. • Emergency service providers may experience increased response times during an event. 	<ul style="list-style-type: none"> • Non-attendee road users may delay planned trips or divert around a corridor impacted by a planned special event. • Emergency service providers mandate the provision of unimpeded emergency access routes to and from the event venue and its surrounding area.
Transit user	<ul style="list-style-type: none"> • Bus • Commuter rail 	<ul style="list-style-type: none"> • Transit users may realize service impacts on the day-of-event, including reduced availability of parking at transit stations and system capacity conditions. 	<ul style="list-style-type: none"> • Preferred parking areas may be set aside for commuters during the days of the event.

GOALS OF MANAGING TRAVEL FOR PLANNED SPECIAL EVENTS

Table 1-3 presents the *goals* of managing travel for planned special events.

The potential impact a planned special event has on transportation system operations is often difficult to predict and measure. Periodic planned special events at stadiums and arenas, or similar venues having good access to adjacent high-capacity roadways, may generate highly predictable travel patterns known even by local commuters. But, in many other cases, the characteristics of a planned special event that define the level of event-generated trips, coupled with the event venue location and scope of available transportation system capacity, collectively may yield unpredictable impacts on travel without proper planning and analysis.

Operations, with safety an overarching criteria, during the event can improve transportation system efficiency of operation. With the foreknowledge of a planned special event and the early initiation of planning

efforts, practitioners can achieve efficient transportation system operations even with the additional traffic generated at and adjacent to the event venue.

In meeting these goals, the mission of this technical reference involves disseminating a *suite* of travel management solutions, applicable on both a local and regional level, encompassing the following three broad strategies:

- **Process strategies** include frameworks for facilitating stakeholder coordination, steps for predicting event-generated travel demand and impacts, procedures for developing traffic management initiatives, methods for assessing event impact mitigation proposals, guidelines on implementation activities, protocol for communication, and frameworks for evaluation.
- **Operations strategies** include a range of regulations, traffic and pedestrian control strategies, and transit coordination strategies for operating the transportation system in a manner that fulfills the customer service requirements of event patrons and other road users during a planned special event.

Table 1-3
Planned Special Event Travel Management Goals

GOAL	TECHNIQUE
Achieving <i>Predictability</i>	<ul style="list-style-type: none"> • Perform a multi-modal travel forecast. • Define the area and transportation system components impacted. • Conduct analyses of parking demand and traffic demand. • Identify and correct roadway capacity deficiencies.
Ensuring <i>Safety</i>	<ul style="list-style-type: none"> • Accommodate pedestrians accessing an event via a network of safe walking routes. • Minimize pedestrian/vehicular conflicts. • Provide unimpeded access routes for emergency services. • Prevent congestion-induced secondary incidents.
Maximizing <i>Efficiency</i>	<ul style="list-style-type: none"> • Use all available resources and excess transportation system capacity, including road and transit capacity. • Enhance transportation system operations. • Deploy incident management strategies to respond and clear traffic incidents.

- **Service strategies** include travel demand management policies and other initiatives that strive to improve the utility associated with available travel choices (e.g., mode, vehicle occupancy, and parking destination).

This technical reference emphasizes the need to apply and integrate all possible solutions that benefit the safe and efficient management of travel for a single planned special event or a series of events occurring in a region. On a regional level, a committee on planned special events may adopt process and operations strategies disseminating standard operating procedures. Certain strategies, such as an express/charter bus service, may achieve greater public awareness and success if configured for a series of planned special events. Table 1-4 presents the objectives of this technical reference.

Table 1-4
Technical Reference Objectives

OBJECTIVE
<ul style="list-style-type: none"> • Describe innovative stakeholder partnerships that facilitate continuous coordination, cooperation, and integration of personnel and equipment resources. • Describe processes that stakeholders may adopt to improve current advance planning and day-of-event operations. • Provide methods to raise awareness of potential travel impacts to non-attendee road users and the community at-large. • Detail new technology applications and successful operations strategies to minimize field personnel requirements, improve travel conditions monitoring, and reduce congestion levels. • Identify the advantages of transit use, travel demand management, and accurate, up-to-date traveler information dissemination during the occurrence of a planned special event. • Demonstrate the importance of sound traffic management team organization and communication during the day-of-event. • Communicate the advantages of integrating post-event evaluation activities into program planning for future planned special events.

BENEFITS OF SUCCESSFUL PLANNED SPECIAL EVENTS

As shown in Figure 1-2, communities and regions have promoted and supported planned special events to boost tourism and fuel local and state economies. Examples include:

- The filming of “The Fast and the Furious 2,” requiring extensive use of freeways and streets in Miami-Dade, Broward, and Palm Beach counties, brought an estimated \$14 million to southeast Florida during the four-month filming.⁽²⁾
- The following economic benefits of planned special events were realized by the State of Wisconsin:⁽³⁾
 - \$11 billion annual industry state-wide.
 - \$2.5 billion annual industry in metropolitan Milwaukee.
 - Over \$1 billion generated in state tax revenues.
 - Over \$70 million generated in Federal and state transportation revenues.



Figure 1-2
Community Promotion of Planned Special Events

Public agencies can enhance the image of their area by adopting a planned, coordinated, and integrated approach toward managing travel for planned special events that minimizes traffic congestion, maintains transportation system reliability, and exceeds the customer service expectations of all road users. These users include event patrons, commuters, truckers, and emergency service providers.

Table 1-5 presents the overall benefits that can be realized through managing travel for planned special events.

Table 1-5
Overall Benefits⁽⁴⁾

BENEFIT
<ul style="list-style-type: none"> • Reduced delay for motorists attending the planned special event through more active information dissemination, traffic management, and alternate mode use. • Reduced delay for motorists not attending the special event through active promotion of alternate routes or modes. • Reduced overall traffic demand at or near the special event site through active promotion of alternate routes or modes or dissemination of information, resulting in the cancellation or delay of unnecessary trips. • Improved safety through more active traffic management and reduced motorist frustration.

The proactive and coordinated management of travel for planned special events also yields numerous benefits to transportation stakeholders and transportation system operations, as indicated in Table 1-6.

A successful planned special event also satisfies community residents and businesses possessing no direct interest in the event. Table 1-7 specifies community benefits.

Table 1-6
Benefits to Transportation Stakeholders and System Operations

BENEFIT
<ul style="list-style-type: none"> • Deployment of new technologies for traffic control and monitoring. • Incorporation of new procedures and tactics into everyday traffic/incident management tasks. • Upgrade of transportation system infrastructure. • Improvement in stakeholder productivity. • Promotion of interagency sharing of personnel and equipment resources. • Leverage of public support for newly deployed traffic management and transit initiatives. • Attraction of new regular transit users and carpoolers. • Development of new interagency relationships crossing jurisdictional boundaries. • Improvement in communication and trust between stakeholders. • Coordination of and participation in regional organizations to influence policy and improve activities for all planned special events. • Dissemination of lessons learned and solutions to technical problems that other jurisdictions may encounter in the future. • Promotion of stakeholder efforts in the media, as illustrated in Figure 1-3.

Table 1-7
Community Benefits

BENEFIT
<ul style="list-style-type: none"> • Better community recognition. • Increased pride and community spirit. • Increased awareness of the community as a travel destination. • Increased knowledge of potential for investment and commercial activity in the community. • Increased potential to attract other special events.

Home opener doesn't snarl traffic for long

By **JESSE GARZA**
and **LINDA SPICE**
of the Journal Sentinel staff

Despite the triple whammy of rush hour, an opening day crowd of 42,000 and a presidential motorcade, officials reported few problems along freeway routes leading to Miller Park Friday.

And although roads near the ballpark were clogged by late afternoon, travel times on the rest of the freeway system were close to normal, according to the state Department of Transportation.

For the second Friday night in a row, it appeared that fans had followed the pleadings of officials to leave for the stadium very early and use public transportation.

"Everything went very smoothly," said Sgt. Michael Scharlau of the Milwaukee County Sheriff's Department.

Figure 1-3

Media Promotion of Stakeholder Efforts
(Graphic courtesy of the Wisconsin DOT.)

LITERATURE REVIEW

NCHRP Synthesis 309

A National Cooperative Highway Research Program (NCHRP) synthesis, *Transportation Planning and Management for Special Events*, reports on the state-of-the-practice of transportation-related activities associated with the planning and management of special events.⁽⁴⁾ It identifies how agencies are planning, coordinating services, and managing transportation systems for planned special events. Based on a survey of stakeholder practices related to special event planning and management, the synthesis report addresses special event types, involved stakeholders, tools and techniques for managing travel demand and controlling traffic,

operations guides, qualitative and quantitative assessment efforts, and funding sources.

FHWA Metropolitan ITS Infrastructure Deployment Tracking

The FHWA maintains an Intelligent Transportation Systems (ITS) deployment tracking database based on surveys of agencies in the 78 largest U.S. metropolitan areas and encompassing six ITS infrastructure component areas.⁽⁵⁾ A survey on freeway management includes a select number of questions on special event management, including: (1) regional coordination for planned special events, (2) dissemination of information to the public via techniques such as the Internet, television, kiosks, and telephone information systems, and (3) transportation management center (TMC) operations. Below, survey responses for the Year 2002 are presented, summarizing the scope of regional special event planning and application of certain ITS system characteristics to special event traffic management.

Regional Coordination for Planned Special Events

- 68 percent of surveyed agencies (119 total) participate in a formal multi-agency initiative to proactively plan for and coordinate activities regionally related to special events. Of the agencies that participate in a formal multi-agency initiative:
 - 59 percent of surveyed agencies plan to document and coordinate activities, resources, and policies for all special events.
 - 36 percent of surveyed agencies have entered into an interagency agreement.
 - 64 percent of surveyed agencies participate in a multi-agency team.

- 73 percent of surveyed metropolitan areas (77 total) have agencies that participate in a formal multi-agency initiative to proactively plan for and coordinate activities regionally related to special events. Of the areas with agencies that participate in a formal multi-agency initiative:
 - 63 percent of surveyed metropolitan areas have agencies that plan to document and coordinate activities, resources, and policies for all special events.
 - 43 percent of surveyed metropolitan areas have interagency agreements.
 - 68 percent of surveyed metropolitan areas have multi-agency teams.

Dissemination of Information to the Public

- 43 percent of surveyed agencies distribute information on special events to the public.
- 49 percent of surveyed metropolitan areas have agencies that distribute information on special events to the public.

Transportation Management Center Operations

- 73 percent of surveyed agencies operate a TMC.
 - Of the agencies that operate a TMC, 84 percent indicate that special event traffic management represents a functional capability of their TMC.
- 78 percent of surveyed metropolitan areas have a TMC.
 - Of the metropolitan areas that have a TMC, 82 percent indicate that special event traffic management represents a functional capability of the TMC.

HANDBOOK OVERVIEW

Approach

This technical reference covers five phases of managing travel for planned special events. These phases, comprising the core chapters, include:

- **Program planning** encompasses advance planning activities completed months prior to a single, target event or activities related to a series of future planned special events. This level of advance planning involves the participation and coordination of stakeholders serving an oversight role in addition to agencies directly responsible for event planning and day-of-event traffic management.
- **Event operations planning** involves advance planning and resource coordination activities conducted for a specific planned special event. This phase involves stakeholders organized under the event planning team.
- **Implementation activities** represent a transition phase between event operations planning and day-of-event activities. The event planning team and traffic management team work to strategize traffic management plan deployment in addition to conducting necessary equipment testing and personnel training activities.
- **Day-of-event activities** refer to the daily implementation of the traffic management plan in addition to traffic monitoring. Rapid deployment of traffic management plan strategies and tactics, including contingency plans, requires a well-organized traffic management team and communications infrastructure.
- **Post-event activities** cover the evaluation of local and regional transportation operations based on stakeholder debrief-

ings and an analysis of traffic data collected during the day-of-event. Evaluation involves both the traffic management team and event planning team working together to identify successes and lessons learned, and the stakeholder groups may transfer their determinations to the oversight team for consideration and action under the program planning phase.

Table 1-8 describes common stakeholder-generated products under each phase of managing travel for planned special events. The table highlights corresponding major topics that the technical reference covers. Each of the handbook chapters describing a particular step in the sequential process of planning and managing a planned special event represents a stand-alone chapter. Yet, the technical reference provides a smooth transition from chapter to chapter and integrates the chapters through numerous references.

Intended Audience

The successful implementation of a transportation management plan for planned special events results in lessened traffic congestion and improved safety for event patrons and other transportation system users. Successful transportation management also maintains satisfactory mobility levels for residents and businesses in the vicinity of the event venue and preserves the overall reliability of the local and regional transportation system. Achieving this success requires the involvement of both transportation system operators and other stakeholders, representing various interests and disciplines, to meet the needs of the community and region. Three categories of stakeholders that may participate in the coordinated management of travel for planned special events include: (1) event operations

stakeholders, (2) community interest stakeholders, and (3) event support stakeholders:

- **Event operations stakeholders** represent the *target audience* of this technical reference. These stakeholders collectively work toward predicting, mitigating, and measuring the safety, mobility, and reliability impacts of a planned special event on transportation operations through comprehensive advance planning, day-of-event traffic management, and evaluation and monitoring activities. A traffic operations agency, law enforcement agency, and event organizer represent core stakeholders because of the responsibility they bear in developing and implementing a transportation management plan. As with a traffic operations agency, law enforcement contributes to all phases of managing travel for planned special events and involves associated personnel at the administrative, management, and field operations level.

Other key stakeholders include transit agencies and public safety agencies (e.g., fire and emergency medical service). Table 1-9 lists general responsibilities of event operations stakeholders. In many cases, an event predicted to generate significant travel demand across a region will necessitate the cooperation of *multiple* inter-jurisdictional stakeholders in the affected region.

- **Community interest stakeholders** ensure and review advance planning and operations activities to manage event-generated travel for the purpose of minimizing impacts on community quality of life and maximizing potential social and economic benefits. Non-transportation agencies and elected officials play an important role in

Table 1-8
Planned Special Event Management Phases and Key Tasks

<p>PHASE 1 PROGRAM PLANNING</p>	<p>Coordinate stakeholders serving an oversight role.</p> <p>Establish a regional planned special event program.</p> <p>Develop interagency agreements and legislation.</p> <p>Establish a planned special event permit program.</p> <p>Develop event permit regulations and guidelines.</p> <p>Evaluate permanent and portable infrastructure needs.</p>	<p>HANDBOOK TOPICS</p> <p>Regional level institutional framework</p> <p>Policy support</p> <p>Regional planned special events program</p> <p>Planned special event permitting</p> <p>Infrastructure support</p>
<p>PHASE 2 EVENT OPERATIONS PLANNING</p>	<p>Prepare feasibility study:</p> <ul style="list-style-type: none"> • Travel forecast • Market area analysis • Parking demand analysis • Traffic demand analysis • Roadway capacity analysis <p>Develop traffic management plan:</p> <ul style="list-style-type: none"> • Site access and parking • Pedestrian access • Traffic flow • Traffic control • En-route traveler information • Traffic surveillance • Traffic incident management and safety <p>Evaluate travel demand management initiatives.</p> <p>Develop pre-trip traveler information messages and strategies for distribution.</p>	<p>HANDBOOK TOPICS</p> <p>Initial planning activities</p> <p>Feasibility study</p> <p>External factors affecting scope of event impact</p> <p>Traffic management plan</p> <p>Travel demand management and traveler information</p>
<p>PHASE 3 IMPLEMENTATION ACTIVITIES</p>	<p>Prepare implementation plan.</p> <p>Conduct stakeholder simulation exercises and equipment testing.</p> <p>Recruit and train volunteers and temporary staff.</p>	<p>HANDBOOK TOPICS</p> <p>Implementation plan</p> <p>Review and testing</p> <p>Personnel</p>
<p>PHASE 4 DAY-OF-EVENT ACTIVITIES</p>	<p>Coordinate traffic management team.</p> <p>Establish a command post.</p> <p>Implement interagency communications structure and protocol.</p> <p>Monitor traffic operations and collect performance evaluation data.</p>	<p>HANDBOOK TOPICS</p> <p>Traffic management team</p> <p>Communication</p> <p>Traffic monitoring</p>
<p>PHASE 5 POST-EVENT ACTIVITIES</p>	<p>Conduct participant evaluations:</p> <ul style="list-style-type: none"> • Stakeholder debriefing • Patron survey • Public survey <p>Hold post-event debriefing meeting to identify key successes and lessons learned.</p> <p>Prepare post-event report.</p>	<p>HANDBOOK TOPICS</p> <p>Evaluation framework</p> <p>Participant evaluation</p> <p>Post-event debriefing</p> <p>Post-event report</p>

Table 1-9
Event Operations Stakeholders

STAKEHOLDER	RESPONSIBILITY
Traffic operations agency	<ul style="list-style-type: none"> Operates and maintains the transportation system.
Transit agency	<ul style="list-style-type: none"> Develops specialized transit plans, complementing an event traffic management plan, that detail schedules and necessary equipment and personnel resources.
Law enforcement	<ul style="list-style-type: none"> Facilitates the safe and efficient flow of traffic through traffic control and enforcement.
Event organizer	<ul style="list-style-type: none"> Plans the event operations logistics. Funds the deployment of equipment and personnel resources, including reimbursement of public agency resource costs, required on the day-of-event. Hires a private traffic engineering consultant to perform an event feasibility study and prepare a traffic management plan.
Public safety (e.g., fire and emergency medical service)	<ul style="list-style-type: none"> Ensures adequate provision of emergency access routes to and from the event venue.

establishing policies, regulations, and initiatives for future planned special events. In fact, these agencies and officials may possess the authority to approve or disapprove a special event permit for an event organizer.

- **Event support stakeholders** support, execute, or adhere to the transportation management plan and initiatives proposed by event operations and community interest stakeholders. These stakeholders include private traffic control vendors, private towing companies, the general public, and automobile and trucking associations. Event support stakeholders and emergency service stakeholders may gain valuable insight on the development of event traffic management plan components, including contingency plans, in addition to strategies for reducing event-generated travel demand.

Organization

Overview of Chapters and Major Topics

This technical reference consists of 15 chapters, the final five of which detail and con-

trast advance planning and travel management activities for each of the five defined categories of planned special events discussed in Chapter 2.

Table 1-10 lists the technical reference chapters and indicates what chapters cover each distinct phase of special event management. The table shows Chapters 4 through 10, which represent the core chapters of the handbook, encompass all five phases of managing travel for planned special events.

To assist the reader in quickly navigating the handbook, each page displays a vertical toolbar that indicates the current chapter and section of the technical reference. As noted in Table 1-10, the sections include: (1) overview, (2) advance planning, (3) day-of-event activities, (4) post-event activities, and (5) event profile. Chapters designated under “event profile” discuss specific categories of special events, detail and contrast advance planning and travel management activities, and communicate recommended policies, guidelines, procedures, and resource applications in a user-friendly format tailored to a specific category of planned special event. In turn, readers can easily extract information and reference sample applications.

Table 1-10
Handbook Organization

SPECIAL EVENT MANAGEMENT PHASE	HANDBOOK CHAPTER	HANDBOOK SECTION
	Introduction	Overview
	Chapter 1 <i>Background</i>	
	Chapter 2 <i>Characteristics and Categories of Planned Special Events</i>	
	Chapter 3 <i>Overview</i>	
Program Planning	Chapter 4 <i>Regional and Local Coordination</i>	Advance Planning
Event Operations Planning	Chapter 5 <i>Event Operations Planning</i>	
	Chapter 6 <i>Traffic Management Plan</i>	
	Chapter 7 <i>Travel Demand Management and Traveler Information</i>	
Implementation Activities	Chapter 8 <i>Implementation Activities</i>	
Day-of-Event Activities	Chapter 9 <i>Day-of-Event Activities</i>	Day-of-Event Activities
Post-Event Activities	Chapter 10 <i>Post-Event Activities</i>	Post-Event Activities
	Chapter 11 <i>Discrete/Recurring Event at a Permanent Venue</i>	Event Profile
	Chapter 12 <i>Continuous Event</i>	
	Chapter 13 <i>Street Use Event</i>	
	Chapter 14 <i>Regional/Multi-Venue Event</i>	
	Chapter 15 <i>Rural Event</i>	

User Application




By covering all phases of advance planning and management of travel for planned special events, this technical reference satisfies the information requirements of a wide range of stakeholders. Certain stakeholders may find the majority of handbook chapters pertain to their duties and responsibilities when handling a planned special event. Other stakeholders may only have interest in information disseminated via a few handbook sections. This technical reference rec-

ognizes three user groups, each of whom has an identifiable icon featured in the handbook. If a major chapter section contains topics suited to a particular user group, then the icon representing that group will appear on the same line as the section heading.

Three typical user groups, or event operations stakeholders, charged with managing travel for planned special events in jurisdictions across the country include: (1) transportation engineers, (2) law enforcement officers, and (3) event organizers. Table 1-

11 displays icons corresponding to each user group.

Table 1-11
 Technical Reference User Groups

ICON	USER GROUP
	Transportation engineer
	Law enforcement officer
	Event organizer

The three user groups include:

- **Transportation engineers** include traffic engineers, transit officials, and transportation planners. Traffic engineers may lead event operations planning and day-of-event traffic management activities. Event operations planning activities may include developing and reviewing traffic management plans and formulating traffic signal system timing plans to accommodate anticipated fluctuations in traffic demand. Traffic engineers have a day-of-event responsibility of monitoring and maintaining traffic flow traversing their jurisdiction. Transit officials examine potential public transit incentives in addition to event express bus service. Transportation planners may administer a permit application for a local planned special event.

- **Law enforcement officers** may take responsibility for developing and executing a street traffic management plan. Other potential duties of law enforcement include traffic control and security on the day-of-event, enforcing traffic and parking restrictions, escorting dignitaries to/from the event venue, and enforcing the requirements of a traffic operations agency.
- **Event organizers** initiate the event operations planning phase by notifying stakeholders, through a written request to public agencies or the submission of an event permit application, and assembling an event planning team. The event organizer governs the logistics of the planned special event. The event organizer continually works to maintain inter-agency coordination in order to meet milestones in the advance planning process and ultimately gain stakeholder approval of the proposed transportation management plan.

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CHAPTER TWO

CHARACTERISTICS AND CATEGORIES OF PLANNED SPECIAL EVENTS



Figure 2-1

Event Traffic Management (*Photo courtesy of the Wisconsin DOT.*)

PURPOSE

This chapter presents planned special event operations characteristics and associated factors defining the scope of event impact on transportation system operations. It describes *planned special event classification* in terms of event categories and event impact level. This chapter also introduces the *stakeholder groups* organized under the various phases of managing travel for planned special events.

PLANNED SPECIAL EVENT

CLASSIFICATION

Characteristics

A planned special event impacts the transportation system by generating an increase in travel demand in addition to possibly causing a reduction in roadway capacity because of event staging. The first step toward achieving an accurate prediction of event-generated travel demand and potential transportation system capacity constraints involves gaining an understanding of the event

characteristics and how these characteristics affect transportation operations. In turn, practitioners can classify the planned special event in order to draw comparisons between the subject event and similar historical events to shape travel forecasts and gauge transportation impacts.

Figure 2-2 shows typical operational characteristics of a planned special event. Each characteristic represents a variable that greatly influences the scope of event opera-

tion and its potential impact on the transportation system. These variables include:

- **Event time of occurrence** defines the time of day(s) the event is *open for business*, a key variable when comparing event-generated traffic to background traffic.
 - For example, weekday events may face constraints on roadway, transit, and parking capacity because of commuter travel.

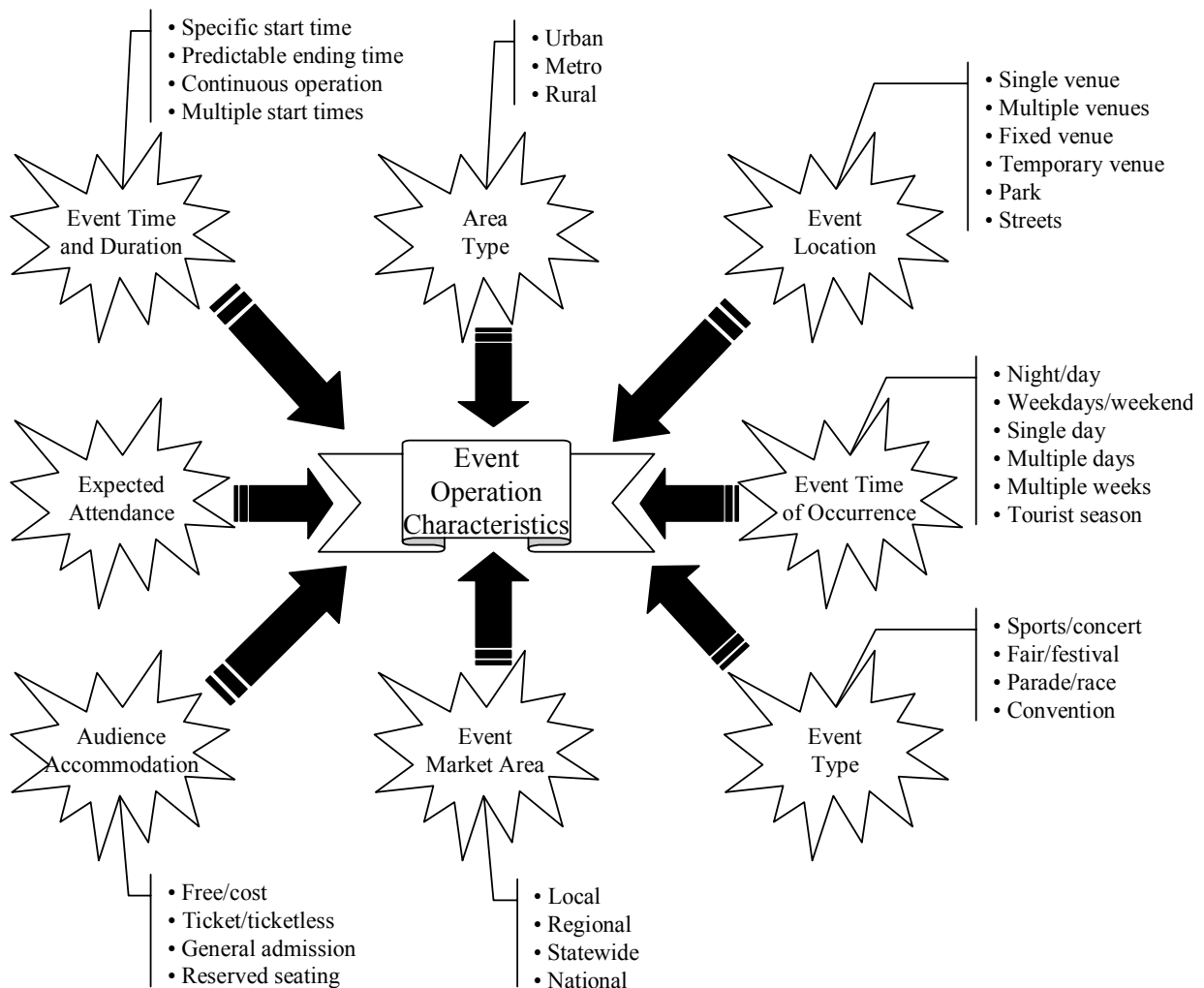


Figure 2-2
Event Operation Characteristics

- **Event time and duration** defines whether the event features a specific main event start time, likely to condense event patron arrival, or operates continuously throughout the day where patrons may freely come and go.
- **Event location** defines the characteristics of the venue(s) location and connection to the existing transportation infrastructure.
 - Typically, fixed venues, such as stadiums or arenas, feature high-capacity parking areas adjacent to the venue and good access to/from adjacent freeways and principal arterial streets.
 - Temporary venues may lack these features, thus requiring the development of a detailed site access and parking plan.
- **Area type** defines the scope of available transportation services, the characteristics of background traffic traversing the area, and the various stakeholders that may become involved in event planning and management. These characteristics influence the event operations planning process and day-of-event travel management, yet significantly vary across rural, urban, and metropolitan areas.
- **Event market area** defines the area from where event patrons originate and the scope of event exposure.
 - For example, the Summerfest music festival in downtown Milwaukee drew over one million in attendance over eleven days in 2002. Demographic surveys indicated 56 percent of Summerfest patrons lived in the four counties comprising the greater metropolitan Milwaukee area, 22 percent of patrons lived in other areas of Wisconsin, and 22 percent of patrons lived outside Wisconsin.⁽¹⁾ The event clearly had a regional/statewide market area.
 - Political conventions or major industry exhibitions feature a national scope where the majority of attendees do not reside in the host city.
- **Expected attendance** defines the maximum, estimated number of event patrons.
 - Attendance estimates may include the anticipated number of VIPs, advance ticket holders, patrons with an assigned parking pass, and patrons requiring special assistance.
 - With regard to sporting events, key components in estimating attendance involve home team performance and visiting team attraction.
 - Games involving high-profile visiting teams or performers may sell-out far in advance of the event, allowing stakeholders sufficient notice to take appropriate measures.
 - Attendance impacts traffic operations in the immediate vicinity of the event venue depending on the access and parking capacity furnished at the venue.
- **Audience accommodation** defines the potential to predict the number and origins of event-generated trips in addition to the type of trip patrons may make to the venue.
 - Attendance at free events is hard to predict and may vary considerably based on weather conditions and other factors on the day-of-event.
 - Events featuring advance ticket sales and reserved seating may decrease the number of event patrons making

a spur-of-the-moment decision to attend an event.

- **Event type** defines the type of event that may be subject to special regulations and permit requirements. The event type includes many of the previously defined characteristics of planned special events that influence event-generated travel demand and level of impact on the transportation system. Event planners may refer to event type when researching impacts on travel caused by similar events.

Categories

The event operation characteristics described in the previous section create five categories of planned special events, listed in Table 2-1.

Table 2-1
Categories of Planned Special Events

SPECIAL EVENT CATEGORY
<ul style="list-style-type: none"> • Discrete/recurring event at a permanent venue • Continuous event • Street use event • Regional/multi-venue event • Rural event

Table 2-2 contrasts some general characteristics specific to each defined event category. Figure 2-3 illustrates events representing four event categories. The fifth category, regional/multi-venue event, includes any combination of the first three event categories listed in Table 2-1.

This technical reference makes exclusive reference to the defined categories of planned special events when referencing or profiling particular event types. In recognizing the unique characteristics of each category of planned special event regarding trip generation and event impact on transportation system operations, many jurisdictions

across the country have developed distinct planning processes, policies, and regulations specific to particular event categories. The balance of this section describes each of the five defined event categories.

Discrete/Recurring Event at a Permanent Venue

A discrete/recurring event at a permanent venue occurs on a regular basis, and it has a specific starting time and predictable ending time. Events classified under this category have predictable peak arrival and departure rates relative to other categories of planned special events. These events generate high peak travel demand rates because of patron urgency to arrive at the venue by a specific event start time. Moreover, these events end abruptly upon game time expiration or the conclusion of a final song, which creates high peak departure rates.

Stadiums and arenas occasionally host weeknight events that may conflict with commuter traffic, especially if media broadcasting the event mandates a specific start time. For instance, a Monday Night Football game held in San Diego, San Francisco, Oakland, or Seattle usually begins at 6:00 p.m. Pacific time to satisfy television broadcast requirements.

Continuous Event

A continuous event occurs over a single or multiple days. Unlike a discrete/recurring event at a permanent venue, continuous events do not exhibit sharp peak arrival and peak departure rates. Event patrons typically arrive and depart throughout the event day.

Aside from conventions and state/county fairs, many continuous events take place at a temporary venue, a park, or other large open

Table 2-2
 Characteristics of Different Planned Special Event Categories

CHARACTERISTIC	PLANNED SPECIAL EVENT CATEGORY
<i>Discrete/Recurring Event at a Permanent Venue</i>	
Event Location	• Fixed venue
Event Time of Occurrence	• Single day; Night/day; Weekday/weekend
Event Time and Duration	• Specific start time; Predictable ending time
Area Type	• Metro; Urban
Event Market Area	• Local; Regional; Statewide; National
Expected Audience	• Known venue capacity
Audience Accommodation	• Cost; Ticket; Reserved seating; General admission
Event Type	• Sporting and concert events at stadiums, arenas, and amphitheaters.
<i>Continuous Event</i>	
Event Location	• Temporary venue; Park; Fixed venue
Event Time of Occurrence	• Single/multiple days; Weekends; Multiple weeks
Event Time and Duration	• Continuous operation
Area Type	• Metro; Urban
Event Market Area	• Local; Regional
Expected Audience	• Capacity of venue not always known
Audience Accommodation	• Free/cost; Ticket/ticketless; General admission
Event Type	• Fairs; Festivals; Conventions/expos; Air/automobile shows
<i>Street Use Event</i>	
Event Location	• Streets
Event Time of Occurrence	• Single day; Weekends
Event Time and Duration	• Specific start time; Predictable ending time
Area Type	• Metro; Urban; Rural
Event Market Area	• Local; Regional
Expected Audience	• Capacity generally not known
Audience Accommodation	• Free; Ticketless
Event Type	• Parades; Marathons; Bicycle races; Motorcycle rallies; Grand Prix auto races; Dignitary motorcade
<i>Regional/Multi-Venue Event</i>	
Event Location	• (Multiple) Fixed venue; Temporary venue; Streets
Event Time of Occurrence	• Single/multiple days; Weekends
Event Time and Duration	• Specific start time; Predictable ending time; Continuous operation
Area Type	• Metro (typically); Urban; Rural
Event Market Area	• Local; Regional; Statewide; National
Expected Audience	• Overall capacity generally not known if continuous events or street use events involved
Audience Accommodation	• Free/cost; Ticket/ticketless
Event Type	• Sporting games; Fireworks displays; Multiple planned special events within a region that occur at or near the same time
<i>Rural Event</i>	
Event Location	• Fixed venue; Temporary venue; Park
Event Time of Occurrence	• Single/multiple days; Weekends; Tourist season
Event Time and Duration	• Specific start time; Predictable ending time; Continuous operation
Area Type	• Rural
Event Market Area	• Local; Regional
Expected Audience	• Capacity of venue not always known
Audience Accommodation	• Free/cost; Ticket/ticketless
Event Type	• Discrete/recurring event; Continuous event



Figure 2-3
Examples of Planned Special Events

space. As a result, roadway and parking capacity issues may arise in the immediate area surrounding a temporary venue. Temporary venues may not have a defined spectator capacity, thus creating uncertainties in forecasting event-generated trips since a “sell-out” cap does not exist.

Street Use Event

A street use event occurs on a street requiring temporary closure. These events generally occur in a city or town central business district; however, race events or motorcycle rallies may necessitate temporary closure of

arterial streets or limited-access highways.

A street use event significantly impacts businesses and neighborhoods adjacent to the event site from the perspective of parking and access. A street use event closes a segment(s) of the roadway network and causes background and event traffic to divert onto alternate routes, thus increasing traffic demand on other streets in the roadway network.

Filming activities may require the closure of major roadways for an extended duration, but stakeholders can work with production companies on day-of-the-week scheduling.

Regional/Multi-Venue Event

A regional/multi-venue event refers to multiple planned special events that occur within a region at or near the same time. The collection of events may have different starting times and differ in classification category. For instance:

- On August 31, 2002, downtown Denver hosted the Grand Prix of Denver (attendance 20,000), the Taste of Colorado festival (attendance 150,000), and a college football game (attendance 76,000).⁽²⁾ Grand Prix races and the Taste of Colorado also occurred simultaneously on two other days of Labor Day weekend 2002.
- Major fireworks displays warrant consideration under this event category since large crowds may spread out over a large area depending on the number of good vantage points available.
- The lack of overflow parking and roadway congestion represents some of the key concerns when planning for multiple events occurring within a small area.

A number of major metropolitan areas have two or more adjacent fixed venues or venues utilizing the same freeway corridor. Multiple venues may occasionally host events on the same day.

- Figure 2-4 illustrates an example of a regional/multi-venue event that occurred in Anaheim, CA. The Anaheim Angels baseball team hosted a playoff game at Edison Field, and the Mighty Ducks of Anaheim hockey team played against a high-attendance drawing team from Detroit at the Arrowhead Pond, located on the opposite side of State Route 57 and Katella Avenue from Edison Field. Both events sold-out, but the baseball game had been scheduled only days before its

occurrence due to the baseball playoff system. Broadcast media likely required the game start time of 1:05 p.m. As a result, high departure rates from Edison Field and high arrival rates to Arrowhead Pond occurred at approximately the same time.

- Although special circumstances surrounded the above example event, stakeholders managing all planned special events within a region emphasize coordination of event times to reduce peak parking demand and impact on transportation system operations.

Rural Event

Rural events encompass any discrete/recurring event or continuous event occurring in a rural area. Planned special events occurring in rural areas deserve a stand-alone classification category for several reasons:

- Need for stakeholders to assume new and/or expanded roles.
- Existence of limited road capacity to access the event venue and potentially limited parking capacity at the venue.
- Existence of fewer alternate routes to accommodate event and background traffic.
- Lack of regular transit service and hotels near the venue.
- Existence of limited or no permanent infrastructure for monitoring and managing traffic.

Impact Level

Stakeholders responsible for planning and managing travel for planned special events must gauge the potential severity of a planned special event. Agencies must determine with certainty *if* a planned special event will affect or impede the normal flow

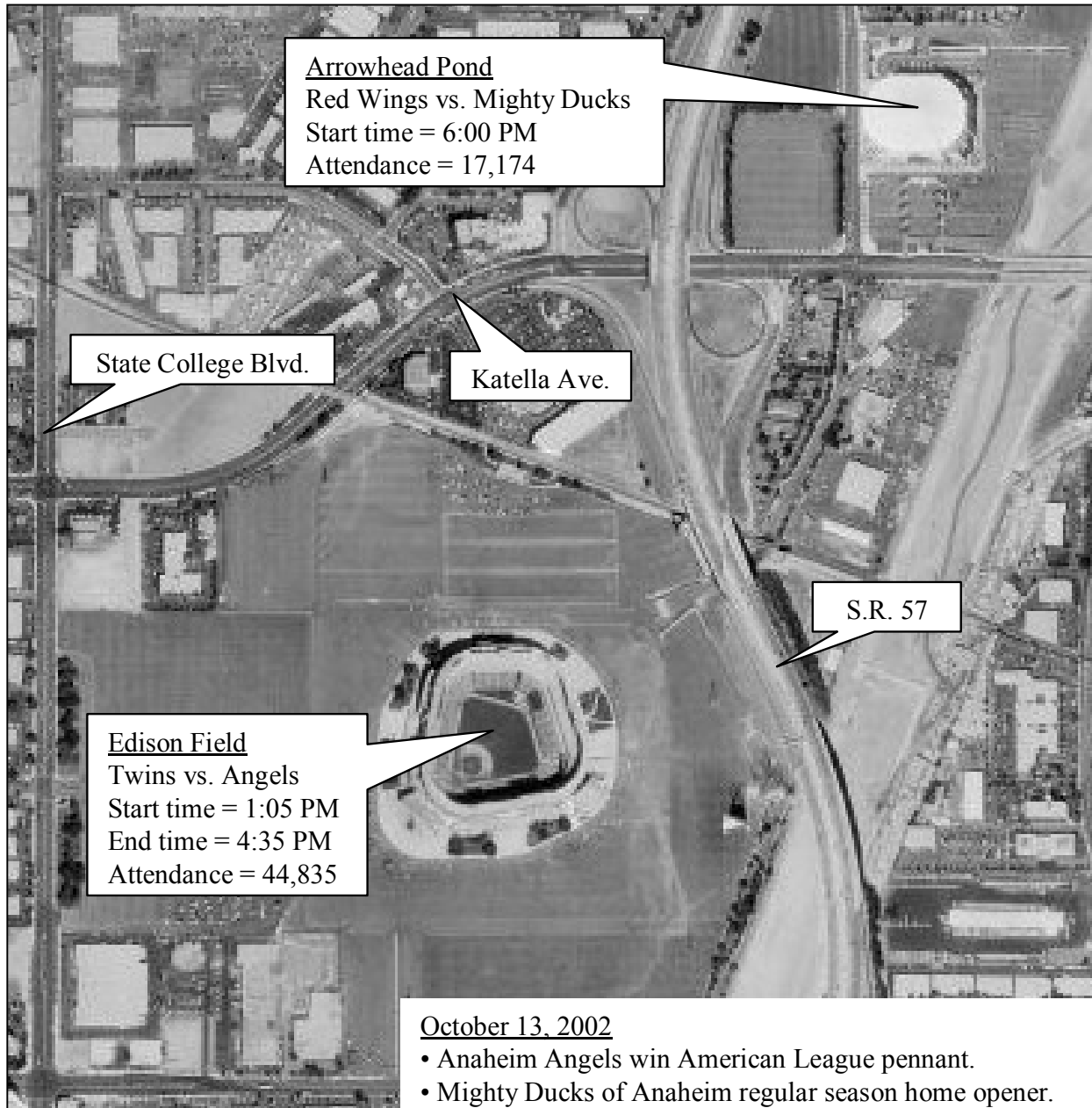


Figure 2-4
Example Regional/Multi-Venue Event

of traffic and if yes, *how much* impact will the event have. Answers to these questions determine the scope of the transportation management plan required to mitigate event-generated impacts on travel in addition to the number of stakeholders that become involved in advance planning and day-of-event travel management activities.

Example Incident Management Protocol

The stakeholders and resources involved in traffic incident management and managing travel for planned special events overlap. The following examples of classifying a planned special event under a traffic incident severity level illustrate how traffic incident

responders determine the resources and level of effort required to manage traffic during a planned special event:

- A new chapter included in the proposed amendments to the 2000 Manual on Uniform Traffic Control Devices (MUTCD), entitled “Control of Traffic Through Traffic Incident Management Areas,” defines an incident as follows:⁽³⁾

A traffic incident is an emergency road user occurrence, a natural disaster, or a special event that affects or impedes the normal flow of traffic.

The proposed MUTCD amendment classifies traffic incident severity by duration of incident. Incident classification levels include:

- Major – expected duration of more than 2 hours;
- Intermediate – expected duration of 30 minutes to 2 hours; and
- Minor – expected duration under 30 minutes.

Planned special events having a duration of two hours fall within the classification of “major incident.”

- The Colorado Department of Transportation (DOT) – Region 6 maintains the following criteria for classifying a planned special event as a Level III Modified Incident, the highest Region 6 traffic incident severity level: *special or planned events that have major impacts.*⁽⁴⁾

Planned Special Event Severity

It is important to recognize that the impact of a planned special event on traffic and transit operations depends on a combination

of several dynamic factors. Collectively, planned special event impact factors differ from those considered in determining the severity of other types of planned and unplanned events.

As illustrated in Figure 2-5, the three core factors include travel demand, road/site capacity, and event operation. Available resources and external factors represent secondary aspects that also affect the impact a planned special event has on transportation system operations. Key considerations include:

- **Travel demand** refers to the expected number of event patrons and their arrival and departure rates. Modal split has a significant influence on the level of event impact, particularly on traffic operations. Event patrons may travel to the event via personal vehicle, transit, walking, or a combination of modes. A planned special event travel forecast involves estimating travel demand magnitude, travel demand rate, and modal split.
- **Road/site capacity** concerns the available venue access and parking *background capacity* in addition to the capacity of roadways and transit serving the event venue. Capacity must take into account: (1) background parking occupancy in parking areas serving the event venue and (2) volume of background traffic that normally traverses the road system serving the event venue. Capacity influences travel demand to a limited extent, as “seasoned” event patrons in some locales may choose to use transit to access an event venue, because of severe traffic congestion experienced in the past, although they may not represent regular transit users.

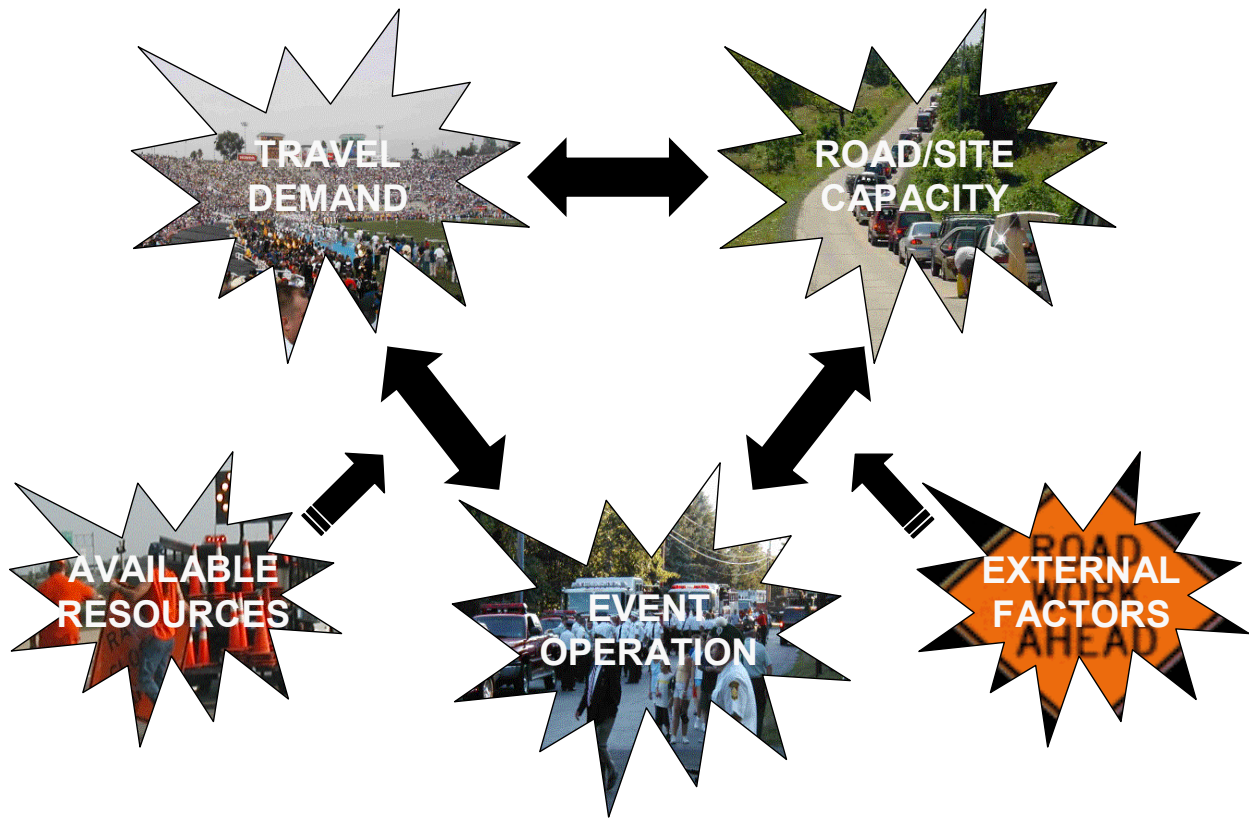


Figure 2-5
Planned Special Event Impact Factors

- **Event operation** essentially defines the scope of travel demand, including market area, and may reduce available background capacity because of event staging requirements. Event operations impact the effect a planned special event has on travel. For instance:
 - A venue may open earlier to better spread the rate of arrivals for a concert or sporting game.
 - Event patrons may be given special advance instruction on specific parking options.
 - An event organizer may relocate an event to a different venue when roadway capacity deficiencies can not be adequately mitigated.
 - On the other extreme, corporate hospitality tents at the 2003 Super Bowl in San Diego reduced the amount of

available on-site parking from 19,600 spaces to 3,400 spaces.⁽⁵⁾

- **Available resources** refer to the quantity of personnel and equipment available to plan for and conduct day-of-event travel management operations. The occurrence of regional/multi-venue events or other unplanned events may strain available stakeholder resources needed to manage a particular planned special event.
- **External factors** include concurrent roadway construction activities on roadway corridors serving a venue and prevailing weather conditions on the day-of-event. Weather conditions have a significant impact on attendance (e.g.,

travel demand) or the rate of arrivals and departures at some events. For example:

- Event patrons will attend an open-air sporting event in extremely hot weather, but patrons may bypass arriving at the venue early to tailgate, thus concentrating patron arrivals.
- Rain events may flood unpaved parking lots and venue access roads, rendering them impassable and reducing available road/site capacity. Rain events may also cause sharp arrival and departure rates in addition to safety problems.

When determining the level of impact each of the five stated planned special event factors has on travel, consider each of the following components:

- Duration – temporal impact.
- Extent – spatial impact or scope of area affected.
- Intensity – volume of impact.

Planned Special Event Impact Classification

Jurisdictions have established defined planned special event impact classification levels for the purpose of determining: (1) event permit requirements, (2) transportation management plan deployment, and (3) scope of potential impact on the transportation system.

The balance of this section summarizes various frameworks, based on a range of event impact factors and thresholds, applied to estimate the severity level of a particular planned special event for advance planning purposes.

Event Permit Requirements

A number of communities with planned special event permit guidelines have also devel-

oped criteria to categorize various sizes of planned special events. As a result, one proposed special event may have to meet more stringent permitting requirements than other events based on its severity classification. Decision criteria include expected attendance and scope of street closure.

The following examples summarize the permit classification standards of several jurisdictions, and the collective category thresholds specific to each jurisdiction vary by jurisdiction population:

- Alpine County, CA (pop. 1,208) specifies three planned special event category sizes:
 - Minor event – 75-100 people.
 - Mid-size event – 101-500 people.
 - Major Event – 501+ people: requires public hearing with the Alpine County Planning Commission.
- West Sacramento, CA (pop. 31,615) maintains three planned special event category sizes:
 - Category 1 event – 50 to 499 people.
 - Category 2 event – 500 to 2,999 people.
 - Category 3 event – 3,000 or more people: requires major police support and traffic control.
- Louisville, KY (pop. 256,231) specifies three planned special event category sizes:
 - Small Event – maximum peak attendance of 500 people or less.
 - Special Event – maximum peak attendance of more than 500 and less than 5,000 people.
 - Major Event – maximum peak attendance of 5,000 or more people.
- Clarksville, TN (pop. 103,455) states a “minor event” must meet the following

transportation impact criteria: (1) event must last no longer than one day and (2) street closures will be less than four hours and limited in scope.

- Palo Alto, CA (pop. 58,598) developed three street use event impact classifications based on the spatial characteristics of proposed street closures. The street use event categories are:
 - Class A – A celebration, parade, local special event, festival, meeting, procession, concert, rally, march, or any similar occurrence which exceeds one city block in length or obstructs more than one intersection, whether or not such occurrence is moving.
 - Class B – A Class A closure or a block party of any similar occurrence not exceeding one city block or one intersection on other than arterial or collector streets, and along which at least two-thirds of the area is in a residential zone.
 - Class C – A local special event or similar occurrence involving the display, exhibition, advertisement, or sale of merchandise, etc., upon a portion of the public sidewalk. Cannot exceed 50% of width of sidewalk.

Venue Transportation Management Plan Deployment

Stakeholders often develop transportation management plans specific to a permanent venue, such as a stadium, arena, or amphitheater. Development of site access and parking plans usually occur during venue construction. Transportation agencies and law enforcement may develop traffic control plans, based on a generic or recurring event, for managing transportation operations on streets adjacent to the venue and/or corridors serving the venue during future planned spe-

cial events. These *program planning* activities do not focus on a single, known planned special event. Therefore, stakeholders must establish transportation management plan deployment thresholds to ensure availability and placement of adequate resources to maintain satisfactory site and transportation operations during any future planned special event occurring at the venue.

- The parking and transportation management plan for Investco Field in Denver contains separate traffic management and operations plans, categorized under four attendance scenarios, for future planned special events occurring at the venue.⁽⁶⁾
 - Sold-out Denver Broncos (football) games.
 - Other large events with an attendance of more than 60,000.
 - Medium events with an attendance between 40,000 and 59,000.
 - Small events with an attendance between 20,000 and 39,000.

The traffic management and operations plans for each scenario vary based on: (1) event patron modal split prediction, (2) site parking lot usage, (3) Investco Field transit service, and (4) level of personnel and equipment resources for traffic control in the vicinity of Investco Field.

Regional Traffic Operations Impact Level

The State of Wisconsin and the City of Los Angeles assign event impact levels for a proposed planned special event:

- The organization of the Traffic Incident Management Enhancement (TIME) program in southeastern Wisconsin includes a 40-plus agency Freeway Incident Management Team responsible for pro-

viding technical guidance toward TIME implementation. This group maintains a subcommittee on special events. The special events subcommittee proposed a concept of creating a special event traffic management planning tool applicable to any planned special event proposed in the greater Milwaukee metropolitan area. The tool proves particularly useful for assessing the required multi-agency response to a planned special event proposed with relatively brief advance notice. Based on the input of information related to the previously described five event impact factors, the tool assigns one of five event impact levels to a proposed event. The following numerical thresholds define the five event impact levels:

- Traffic Condition Level 1 = 15
- Traffic Condition Level 2 = 25
- Traffic Condition Level 3 = 35
- Traffic Condition Level 4 = 45
- Traffic Condition Level 5 = 65

Figure 2-6 shows a draft version of the planning tool, including the numerical values assigned to each event impact factor answer. TIME stakeholders plan to develop an action plan corresponding to each identified planned special event level. The action plan will list recommended practices for stakeholders that regularly manage traffic during the occurrence of a planned special event, including the Wisconsin DOT – District 2, county highway departments, law enforcement, and event venue personnel. These recommended practices would detail required staffing levels, on-call equipment, alternate route usage, traffic signal system modifications, available transit options, and other information.⁽⁷⁾

- The City of Los Angeles DOT (LADOT) and Los Angeles Police Department (LAPD) maintain a database of planned

special events scheduled to occur within the agencies’ jurisdiction. The LADOT and LAPD assign an event impact level to each event to describe the general scope of each agency’s involvement in advance planning and day-of-event traffic management. The event impact levels include:

- Level 1: Install and enforce temporary parking restrictions.
- Level 2: Level 1 and deployment of traffic officers (LAPD).
- Level 3: Level 2 and engineering/ATSAC support (LADOT).
- Level 4: Coordinated major event response effort.

ATSAC refers to LADOT’s Automated Traffic Surveillance and Control System. Initially deployed for the 1984 Summer Olympic Games, ATSAC is a computer traffic signal system that monitors traffic conditions and system performance, selects appropriate traffic signal timing strategies, and performs equipment diagnostics and alert functions. Operators at the ATSAC Operations Center receive real-time information from signalized intersection detectors and signal controllers, and operators have access to closed-circuit television images at critical locations throughout the City.⁽⁸⁾

STAKEHOLDER GROUPS

Transportation system performance during a planned special event affects numerous stakeholders. Achieving seamless and efficient transportation operations between freeways, streets, parking facilities, and transit serving a special event venue requires a sound multidisciplinary, inter-jurisdictional, and inter-modal approach. The organization and coordination of

Special Event Traffic Management Planning Tool						
Instructions: Determine what level of traffic will be experienced by answering the following questions to the best of your ability. Please place an "x" in the white box below the appropriate answer.						
What is the predicted special event attendance?	<i>Under 20,000</i>	<i>20,000 - 30,000</i>	<i>30,000 - 40,000</i>	<i>40,000 - 60,000</i>	<i>over 60,000</i>	
Bradley Center holds 18,000 - 20,000 Miller Park holds 42,000 For more attendance information contact the TOC.	0	2	4	8	12	PLEASE SELECT ONLY
Does the event mandate lane or ramp closures?	<i>No</i>	<i>Single Closure</i>	<i>Multiple Closures</i>	<i>Full Freeway Closure</i>	<i>Freeway Closure and Additional Closures</i>	
Are any ramps, lanes, arterials, or freeways closed to accommodate a special event?	0	2	8	12	16	PLEASE SELECT ONLY
What is the effect of construction on traffic?	<i>not applicable</i>	<i>some impact</i>	<i>moderate impact</i>	<i>considerable impact</i>	<i>severe impact</i>	
Is there a construction project on any of the corridors leading to or away from the special event venue? Are there any lane closures?	0	2	4	6	10	PLEASE SELECT ONLY
Where is the event?	<i>Downtown Milwaukee</i>	<i>Within the City of Milwaukee</i>	<i>Within Milwaukee County</i>	<i>Metro Milwaukee</i>	<i>Southeastern Wisconsin</i>	
If there is more than one event, choose the location closest to downtown Milwaukee.	8	6	4	2	1	PLEASE SELECT ONLY
What effect does the event scheduling have on traffic?	<i>no impact</i>	<i>some impact</i>	<i>moderate impact</i>	<i>considerable impact</i>	<i>severe impact</i>	
Is the event scheduled to begin or end during a peak period? Is there more than one event beginning or ending at the same time?	0	2	4	6	12	PLEASE SELECT ONLY
Is there transit service to the event?	<i>dedicated route/adequate service</i>	<i>dedicated route/limited service</i>	<i>local service</i>	<i>no service</i>		
	0	2	6	10		PLEASE SELECT ONLY
Will a VIP be attending?	<i>No</i>	<i>Local</i>	<i>State</i>	<i>National or International</i>	<i>National or International and the President</i>	
	0	0	2	8	10	PLEASE SELECT ONLY
Is there an incident going on affecting the situation?	<i>no impact</i>	<i>some impact</i>	<i>moderate impact</i>	<i>considerable impact</i>	<i>severe impact</i>	
Is there an incident on or near a corridor to the special event? Are there lane closures because of the incident?	0	2	4	6	10	PLEASE SELECT ONLY
What are the weather conditions?	<i>Clear</i>	<i>Mild</i>	<i>Moderate</i>	<i>Severe - Summer</i>	<i>Severe - Winter</i>	
Is there a forecast for severe weather before, during, or after the special event that might effect traffic?	0	1	2	6	10	PLEASE SELECT ONLY
Are all human resources available?	<i>Yes</i>	<i>Most</i>	<i>Some</i>	<i>Few</i>	<i>None</i>	
Is the event scheduled to begin and end during normal working hours? Are key individuals available if needed?	0	1	2	3	4	PLEASE SELECT ONLY
Is all equipment available?	<i>Yes</i>	<i>Most</i>	<i>Some</i>	<i>Little</i>	<i>None</i>	
Are all facilities available? Is communication equipment working? Is all traffic control equipment available?	0	1	2	3	4	PLEASE SELECT ONLY
						0
TRAFFIC CONDITION:			LEVEL 1			

Figure 2-6
Wisconsin TIME program Special Event Traffic Management Planning Tool
(Graphic courtesy of the Wisconsin DOT.)

planned special event stakeholders is paramount to meeting the goals of planned special event management: achieving predictability, ensuring safety, and maximizing efficiency. Steps toward meeting this objective begin in the advance planning of traffic management plans and other initiatives and continues through implementation and day-of-event travel management.

Planned special events can involve a wide range of stakeholders with diverse goals and incentives. One of the biggest challenges to consistently achieving effective planned special event management is coordinating and integrating the responses of all involved stakeholders, each with responsibility to serve the public, but with sometimes divergent priorities and performance objectives. Each stakeholder has its own norms, guidelines, sense of authority, and internal culture. The involvement of multiple stakeholders can threaten the sense of security and authority of each, causing such groups to unconsciously de-emphasize the public good each has set out to serve.⁽⁹⁾ As a result, the objectives of the collective stakeholder group are left unfulfilled.

Several stakeholders active in the advance planning and management of planned special events also team to mitigate the occurrence of unplanned events, such as traffic incidents and other emergencies, through proactive planning and response. These stakeholders include transportation agencies, law enforcement, and emergency service agencies. It should be recognized that the roles and responsibilities of stakeholders involved in managing unplanned events change under planned special events. However, the important partnerships and level of trust established between stakeholders carry over to groups formed to plan and manage planned special events.

Figure 2-7 shows that advance planning and day-of-event management of travel for planned special events involves stakeholders comprising the following three distinct groups:

- The **oversight team** involves stakeholders participating in program planning activities to improve the management of travel during future planned special events. These stakeholders include mid-to-upper level representatives of transportation agencies and law enforcement. Additional stakeholders include elected officials, regional organizations, and other government agencies. Members of an oversight team work to establish policies, regulations, procedures, and task forces for future application to a specific planned special event. Team members may interact with an event planning team, consulting on feasibility study results and evaluating conceptual transportation management plan components. Stakeholders may also work independent of the team to evaluate potential new technology applications that may improve their performance and capabilities while meeting team objectives.
- The **event planning team** involves stakeholders participating in event-specific operations planning and traffic management plan implementation tasks. Stakeholders comprising the oversight team typically have mid-level representatives serving on the event planning team. Other stakeholders include the event organizer, media, emergency service agencies, private industry, and the public. Due to the wide range of advance planning tasks and potential event management initiatives, an event planning team may create a number of

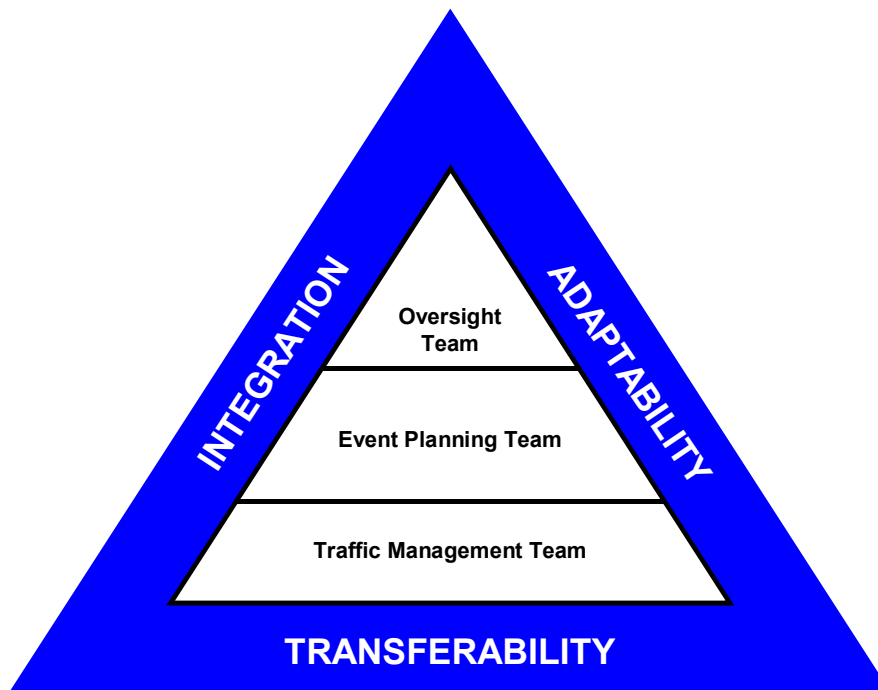


Figure 2-7
Planned Special Event Stakeholder Groups

satellite task forces. Example task forces include a communications sub-committee or task force on evaluating potential travel demand management strategies.

- The **traffic management team** involves stakeholders responsible for managing travel on the day-of-event. These stakeholders include operations managers and field personnel representing transportation agencies, law enforcement, the event organizer, media, and private industry. An event traffic management team typically interacts with the event planning team during implementation activities. The traffic management team may also debrief the oversight team and event planning team during post-event evaluation activities.

Major annual event or venue task forces exist in some jurisdictions that serve the role of both an oversight team and event planning team. The task force may meet year-round to mitigate lessons learned from past events, then expand to include additional event operations stakeholders as the next event nears.

The success of each identified stakeholder group in meeting the goals of managing travel for planned special events depends on three criteria: integration, adaptability, and transferability:

- **Integration** refers to achieving stakeholder cooperation and coordination across disciplines and jurisdictional boundaries. Interagency resource sharing represents a product of such stakeholder coordination.
- **Adaptability** concerns the ability of stakeholders to adapt to new roles and

responsibilities unique to managing travel for planned special events. These new roles may involve changes in stakeholder authority compared to roles under other types of planned and unplanned events.

- **Transferability** refers to maintaining continuous interagency communication, sharing of expertise to effect interagency training, and exchanging observations and lessons learned relative to stakeholder experiences.

The discussed criteria facilitates good management that, in turn, helps meet the needs of all road users and achieve satisfactory outcomes for each involved stakeholder.

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CHAPTER THREE OVERVIEW



Figure 3-1
Event Pedestrian Management

PURPOSE

This chapter presents a high-level summary of managing travel for planned special events for all users of this technical reference. It aims to identify the key aspects of each step necessary to manage travel for a specific planned special event and all special events in a region.

This chapter provides a *background* on the purpose of managing travel for planned special events. It highlights all of the steps necessary to manage travel for a particular planned special event and all planned special events in a region. Recommended policies, guidelines, procedures, strategies, and resource applications that support and facili-

tate each step are indicated and organized through the following five phases: *program planning*, *event operations planning*, *implementation activities*, *day-of-event activities*, and *post-event activities*.

INTRODUCTION

This chapter provides all users with a working knowledge of the techniques and strategies that practitioners may use to successfully: (1) plan for and operate a particular planned special event or (2) manage all planned special events in a region. In turn, individual stakeholders gain an understanding of the collective tasks facing multidisciplinary and inter-jurisdictional planned special event stakeholder groups charged with

developing and implementing solutions to acute and system-wide impacts on travel during a special event.

Subsequent chapters of this handbook provide expanded and in-depth coverage of all potential tasks and stakeholder activities conducted within individual planned special event management phases. Chapters 4 through 10, which represent the core chapters of this handbook, contain detailed information on advance planning, day-of-event operation, and post-event evaluation activities that stakeholders perform and/or consider in mitigating special event impacts on transportation system operations. Chapters 11 through 15 describe an advance planning and travel management process and considerations specific to a particular category of planned special event.

A background section describes how transportation operations vary during a planned special event and identifies advance planning activities employed to successfully manage travel for a special event. This section identifies specific stakeholders, coupled with their typical duties and responsibilities, that may actively participate under different phases of special event management. It also includes a discussion on the distinct, chronological phases of managing travel for planned special events, including the common products generated in each phase and associated benefits of carrying out each phase.

A section on categories of planned special events identifies special characteristics specific to each event category that impacts transportation system operations.

This chapter concludes by summarizing planning approaches, operational strategies, and technology applications for managing transportation system operations during

phases of managing travel for planned special events. These sections collectively present all the steps necessary to manage travel for a particular planned special event in addition to future events in a region.

BACKGROUND

In the past, the media has reported horrendous traffic congestion that has occurred at several major planned special events. In one instance, golfers participating in a major professional golf tournament were caught in major traffic jams along with event patrons and other motorists. Facing a 2-stroke penalty or disqualification if they arrived at the first tee past their assigned tee time, several players pulled their cars to the side of the road, carried their golf bags, and walked to the course. These situations emphasize the need for this handbook, which presents policies, guidelines, procedures, strategies, and resource applications that assure the successful management of travel for planned special events.

What is Managing Travel for Planned Special Events?

A planned special event creates an increase in travel demand and may require road closures to stage the event. Planned special events generate trips, thus impacting overall transportation system operations. This includes freeway operations, arterial and other street operations, transit operations, and pedestrian flow. Unlike roadway construction activities or traffic incidents that constrain travel within a single corridor, planned special events affect travel in all corridors serving the event venue.

Managing travel for planned special events involves developing a transportation management plan that contains operations and

service strategies specific to managing traffic, transit, and travel demand. As shown in Figure 3-2, a transportation management plan consists of three components:

- Traffic management plan
- Transit plan
- Travel demand management initiatives

Traffic operations agencies, transit agencies, law enforcement agencies, and event organizers represent key stakeholders in the transportation management plan development process because of the responsibility they bear in developing, approving, and implementing the plan. To ensure that the plan addresses the requirements of all those im-

pacted, the event planning team should be comprised of a wide range of stakeholders:

- Event operations stakeholders focus on mitigating the safety, mobility, and reliability impacts on transportation operations.
- Community interest stakeholders seek to minimize impacts on community quality of life and maximize potential social and economic benefits.
- Event support stakeholders serve to support and execute the transportation management plan by following proposed initiatives or providing necessary resources for plan deployment.

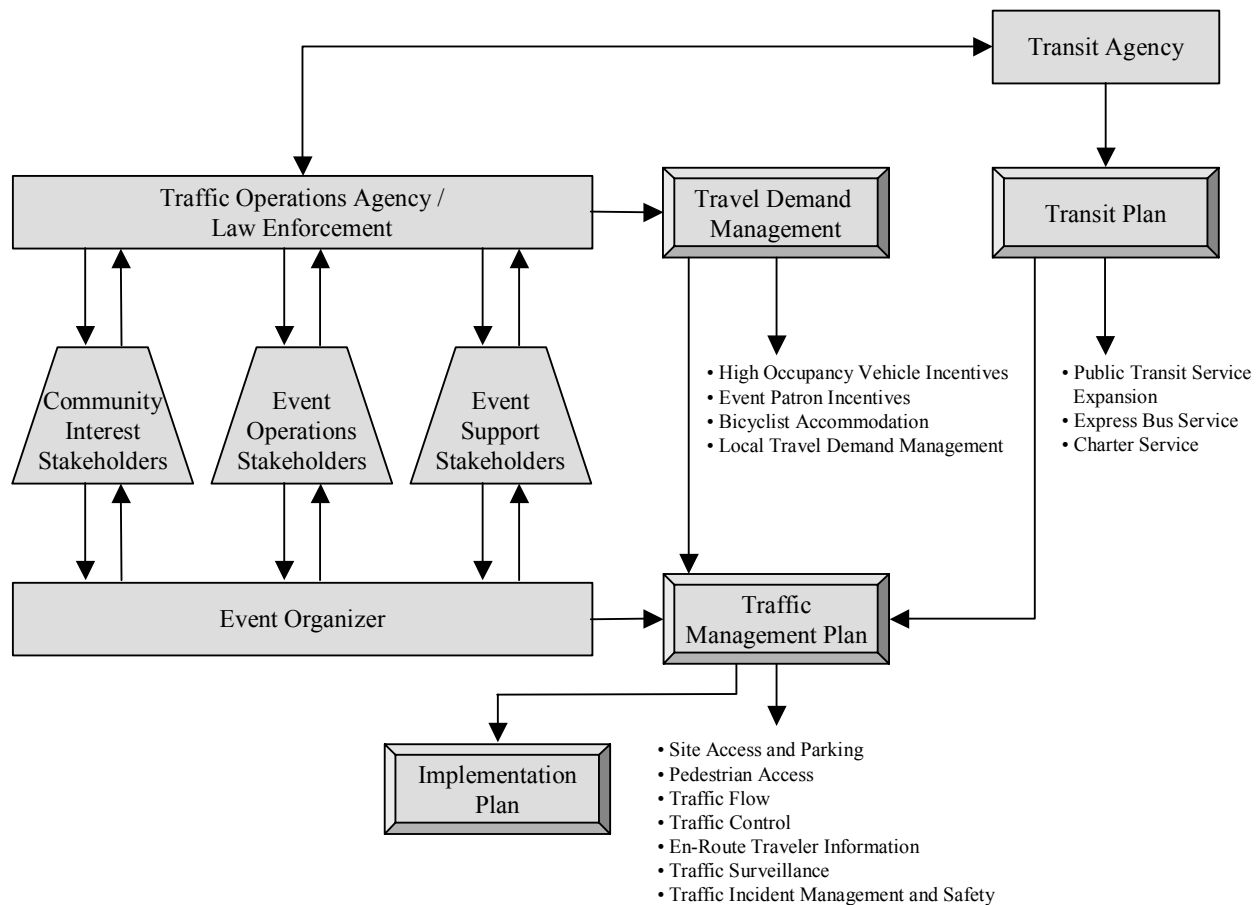


Figure 3-2
Transportation Management Plan Components and Event Planning Team Involvement

Stakeholder Roles and Coordination

The advance planning and management of travel for planned special events requires the consistent involvement and coordination of stakeholders throughout all phases of the event. Table 3-1 indicates the responsibilities of the three stakeholder groups.

- An oversight team involves mid-to-upper level representatives of transportation agencies and law enforcement. Additional stakeholders include elected officials, regional organizations, and other government agencies.
- The event planning team consists of mid-level representatives of transportation agencies and law enforcement as well as the event organizer, media, public safety agencies, private industry, and the public.
- A traffic management team includes operations managers and field personnel

representing transportation agencies, law enforcement, the event organizer, media, and private industry.

Major annual event or venue task forces exist in some jurisdictions that serve the role of both an oversight team and event planning team. The task force may meet year-round to mitigate lessons learned from past events, then expand to include additional event operations stakeholders as the next event nears.

Figure 3-3 presents common stakeholders, representing various disciplines and jurisdictions, that play an active role in managing travel for planned special events on a local and/or regional level.

The following subsections describe the potential roles and responsibilities of each identified stakeholder in addition to his or her coordination with other planned special events stakeholders.

Table 3-1
Responsibilities of Stakeholder Groups

STAKEHOLDER GROUP	FUNCTION
Oversight Team	<ul style="list-style-type: none"> • Manage all planned special events in a region. • Establish policies, regulations, procedures, and task forces for future application to a specific planned special event. • Identify infrastructure improvements and evaluate potential new technology applications. • Interact with an event planning team, consulting on feasibility study results and evaluating conceptual transportation management plan components.
Event Planning Team	<ul style="list-style-type: none"> • Conduct event operations planning activities for a specific planned special event. • Perform traffic management plan implementation tasks.
Traffic Management Team	<ul style="list-style-type: none"> • Manage travel on the day-of-event. • Interact with the event planning team during implementation activities. • Debrief the oversight team and event planning team during post-event evaluation activities.

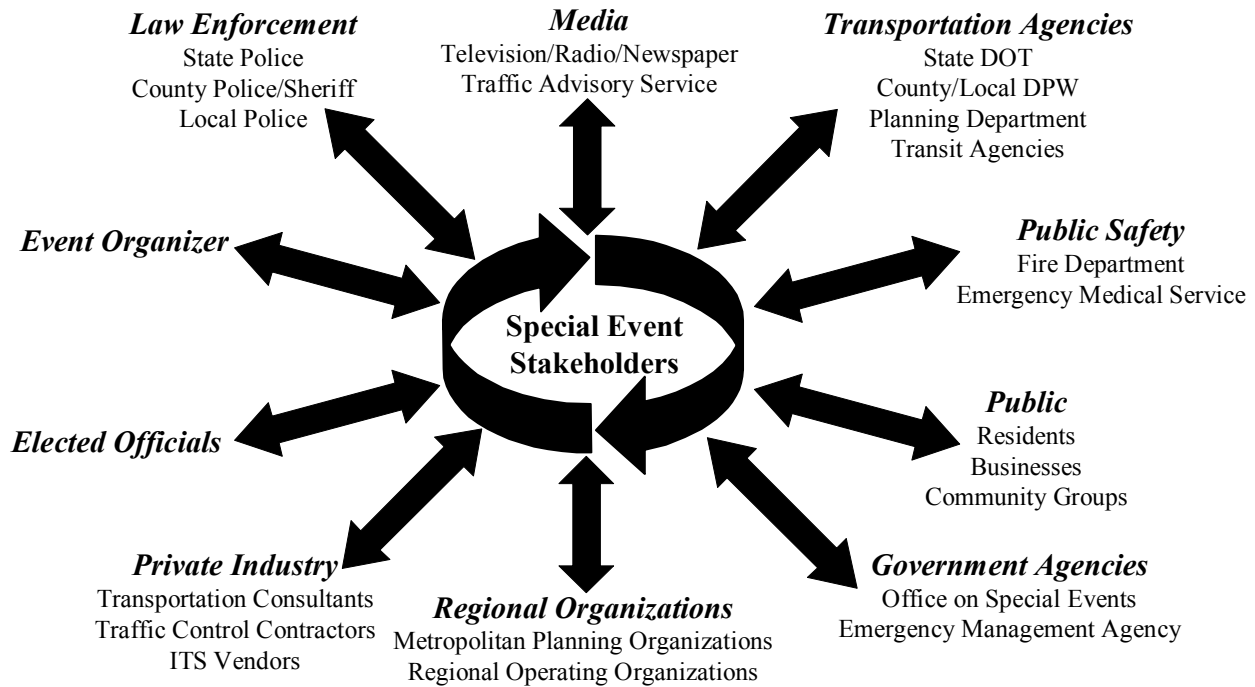


Figure 3-3
Planned Special Event Stakeholders

Transportation Agencies

Transportation agencies own and operate the transportation system serving a planned special event. These agencies staff all three of the above mentioned stakeholder groups, although actual personnel may vary from group to group. Because of their involvement in every phase of managing travel for planned special events, transportation agencies have the unique opportunity to form partnerships with other stakeholders at different working levels. Such partnerships may lead to: (1) creation of interagency agreements at the program planning or oversight level, (2) agreement to share closed-circuit television (CCTV) video at the event

operations planning or mid-level, and (3) improvement of communications and coordination at the field level.

A state department of transportation (DOT) typically leads advance planning and day-of-event traffic management for freeway and/or arterial corridors serving an event venue. This includes operating a traffic management system to monitor, advise, and control traffic flow on these high-capacity routes. A state DOT may also facilitate the acquisition and deployment of portable, advanced technology equipment providing increased traffic management and monitoring capabilities.

A local or county department of public works (DPW) may include traffic engineers participating in program planning, event operations planning, and day-of-event traffic management. At the program planning level, the agency may initiate infrastructure improvement projects or establish traffic control guidelines for event permits. Event operations planning activities may include developing or reviewing proposed traffic management plans and developing traffic signal system timing plans to accommodate anticipated fluctuations in traffic demand. The agency has authority to enact temporary traffic and parking restrictions on streets adjacent to an event venue. Traffic engineers often serve a supervisory role on a traffic management team. In general, agency officials must monitor and maintain traffic flow traversing their jurisdiction. A local/county DPW assumes an expanded role in traffic operations planning and management for local level planned special events. The agency may also utilize roadway maintenance personnel to deploy required temporary traffic control devices, repair potholes along a parade route, and perform post-event street sweeping.

A planning department may administer a permit program for special events while a local jurisdiction planning commission may rule on the transportation component of an event permit application.

The previous section described the role of transit agencies in managing travel for planned special events, which may include service expansions and achieving cooperative agreements with private bus companies to obtain additional equipment and drivers.

Law Enforcement

Law enforcement agencies facilitate the safe and efficient flow of traffic during a planned

special event through traffic control and enforcement. Agencies contribute to all phases of planned special events, particularly event-specific advance planning and traffic management. Local and county law enforcement having a traffic operations bureau may take responsibility for developing and executing a local street traffic management plan. Other potential duties of law enforcement include approving local street closures, approving an event traffic flow plan, approving temporary traffic control deployment, escorting dignitaries to/from the event venue, and enforcing the requirements of a traffic operations agency.

Event Organizers

Event organizers initiate the event operations planning phase by notifying stakeholders, either through a written request to public agencies or the submission of an event permit application, and assembling an event planning team. The event organizer continually works to maintain interagency coordination in order to meet milestones in the advance planning process and ultimately gain stakeholder approval of the proposed transportation management plan. The event organizer may hire a private traffic engineering consultant to perform an event feasibility study and prepare a traffic management plan. The event organizer may also fund the deployment of equipment and personnel resources, including reimbursement of public agency personnel costs, required to mitigate traffic safety, mobility, and reliability impacts during the day-of-event. An event venue operator essentially represents an event organizer. These venue operators may work together with transportation agencies, law enforcement, and elected officials during the program planning phase to develop strategies, including permanent installation of equipment for improved traffic monitor-

ing and control, to better accommodate traffic and transit access to the venue.

Elected Officials

Elected officials serve the overall community interest and often play a significant role on an oversight team. Local politicians can establish laws and regulations toward effecting improvements in planning and managing future planned special events. They may create a special task force to assist event organizers and local agencies to coordinate event planning activities. Local district politicians may advise an event planning team on alternatives to minimize quality of life impacts on represented residents and businesses.

Public Safety

Public safety agencies, including a fire department and emergency medical service, represent event operations stakeholders that advise the event planning team on the provision of emergency access routes to and from the event venue. Public safety agencies, in addition to law enforcement and an emergency management agency, also work as part of the event planning team to ensure adequate pedestrian access routes and evacuation destination areas exist to meet emergency management plan requirements.

Media

The media functions to disseminate event pre-trip travel information, in addition to real-time traffic and transit information during the day-of-event. A media representative may participate in a meeting of the event planning team to obtain advance information on proposed temporary traffic control, transit, and travel demand management initiatives. However, the media gener-

ally works independently of the traffic management team on the day-of-event.

Private Industry

Private industry satisfies a wide range of public agency needs from the event operations planning phase through the day-of-event activities phase. Traffic engineering consultants may assume the role of a public agency traffic engineer and, in turn, develop a transportation management plan and manage either an event planning team, traffic management team, or both. Private traffic control contractors, such as barricade companies, fulfill the duties of a transportation agency maintenance department. Intelligent Transportation Systems equipment vendors contract with transportation agencies to:

- Supply and install on streets serving a fixed event venue, *permanent* equipment such as CCTV cameras, lane control signals, dynamic trailblazers, and parking management systems
- Deploy *portable* traffic management systems, including portable CCTV, portable changeable message signs (CMSs), portable highway advisory radio (HAR), portable vehicle detectors, and portable traffic signals.

In some instances, transportation agencies may arrange for an equipment demonstration, at no cost to the agency, to evaluate the performance of a particular technology application during a planned special event.

Regional Organizations

Regional organizations interact with both the oversight team and an event planning team regarding major planned special events affecting a regional area. A Metropolitan Planning Organization (MPO) oversees the planning and programming of transportation

management strategies. For example, the agency may communicate and seek feedback on temporary travel demand management strategies with commuter groups and trucking companies. A MPO may loan staff to other public agencies in need of personnel to conduct planning and operations activities. The agency may also establish and/or coordinate temporary task forces charged with a particular function, such as event communications. A Regional Operating Organization (ROO) consists of traffic operations agencies, transit agencies, law enforcement, elected officials, and other operations agencies focused on the operation and performance of a regional transportation system. A ROO works to ensure inter-agency coordination of resources and information across jurisdictional boundaries. It builds partnerships and trust among agencies to improve their productivity and performance, thus creating a more responsive approach to mitigating temporary capacity deficiencies. ROO member agencies may, for example, share traffic signal timing plans, coordinate planned strategies and resources for managing travel, conduct public outreach, and participate in interagency training.

Government Agencies

Government agencies, such as a government office on special events or emergency management agencies, are non-transportation agencies that generally serve in an oversight capacity. A government office on special events may work in tandem with the event organizer to initiate the event operations planning phase and coordinate event planning team stakeholders. Other emergency management and security agencies may meet with the event planning team to obtain an advance debrief on transportation management plan specifics.

Public

The public represents individual residents, businesses, and associated community groups. Residents and businesses potentially impacted by intense traffic and parking demand generated by a planned special event may interact with event planning team stakeholders during a public meeting. This permits concerned citizens the opportunity to review and comment on proposed traffic and parking restrictions needed to accommodate event traffic.

Phases of Managing Travel for Planned Special Events

The practice of managing travel for planned special events incorporates advance planning, management, and evaluation activities encompassing five distinct, chronological phases. Figure 3-4 summarizes the five phases and common products generated by coordinated stakeholder groups under each phase. Collectively, these phases facilitate the successful management of transportation system operations during a planned special event.

Integration of the identified phases, from the post-event activities phase to the program planning phase, creates a seamless process allowing for continuous improvement of transportation system performance from one event to the next, especially in regard to recurring events or events occurring at permanent venues. This iterative process, where stakeholders apply successes and lessons learned from a particular special event to future events, supports activities pertaining to managing travel for all planned special events in a region. Recognition and integration of special event management phases achieves coordination across stakeholder groups, namely the oversight team, event

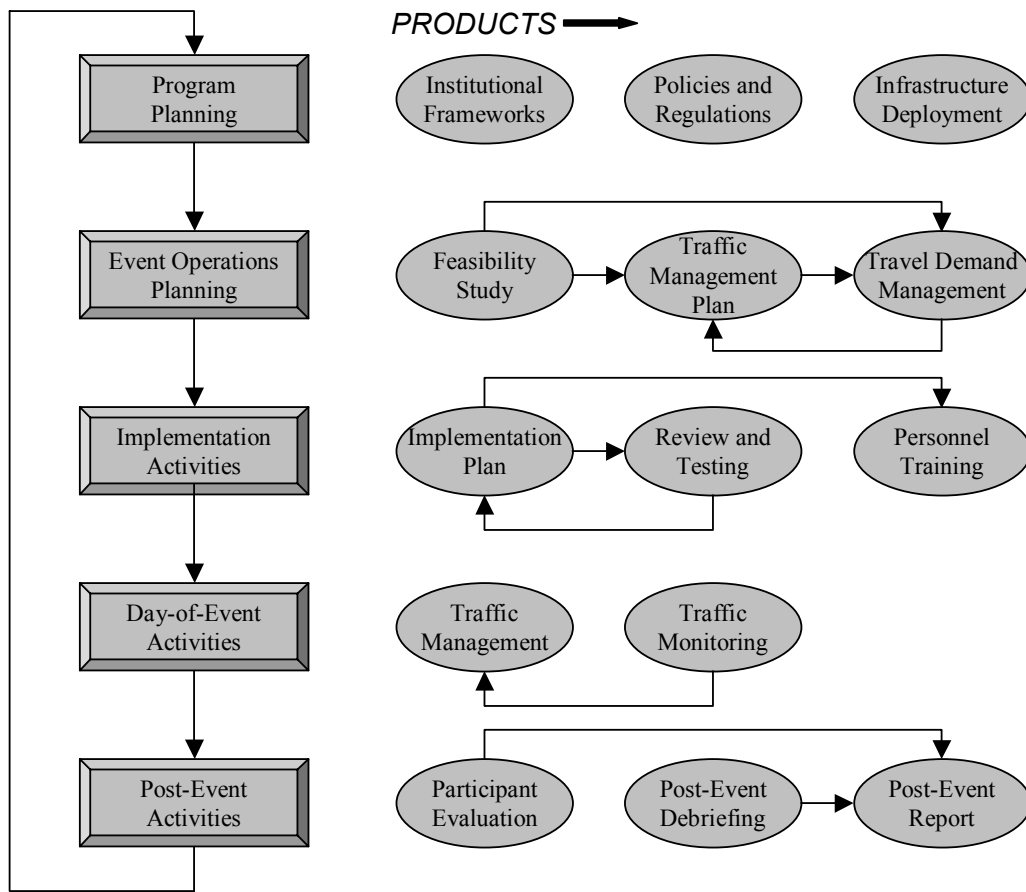


Figure 3-4
Planned Special Event Management Phases and Associated Products

planning team, and traffic management team.

PLANNED SPECIAL EVENT CATEGORIES



The first step toward achieving an accurate prediction of event-generated travel demand and potential transportation system capacity constraints involves gaining an understanding of the event characteristics and how these characteristics affect transportation operations. In turn, practitioners can classify the planned special event in order to draw comparisons between the subject event and similar historical events to shape travel forecasts and gauge transportation impacts.

Table 3-2 lists typical operational characteristics of a planned special event. Each characteristic represents a variable that greatly influences the scope of event operation and its potential impact on the transportation system.

These event operation characteristics create five categories of planned special events, indicated in Table 3-3.

Discrete/Recurring Event at a Permanent Venue

A discrete/recurring event at a permanent venue occurs on a regular basis at a site zoned and designed specifically to accom-

moderate planned special events. This category includes sporting and concert events at stadiums, arenas, and amphitheaters in urban and metropolitan areas. Table 3-4 lists key characteristics of a discrete/recurring event at a permanent venue.

Table 3-2
Event Operation Characteristics

CHARACTERISTIC
• Event time of occurrence
• Event time and duration
• Event location
• Area type
• Event market area
• Expected attendance
• Audience accommodation
• Event type

Table 3-3
Categories of Planned Special Events

SPECIAL EVENT CATEGORIES
• Discrete/recurring event at a permanent venue
• Continuous event
• Street use event
• Regional/multi-venue event
• Rural event

Table 3-4
Distinguishing Operating Characteristics of a Discrete/Recurring Event at a Permanent Venue

CHARACTERISTIC
• Specific starting and predictable ending times
• Known venue capacity
• Advance ticket sales
• Weekday event occurrences

Continuous Event

A continuous event includes fairs, festivals, conventions, and air/automobile shows in urban and metropolitan areas. Aside from conventions and state/county fairs, many continuous events take place at a temporary venue, a park, or other large open space. These venues host planned special events on a less frequent basis than permanent multi-use venues, and planned special event per-

mitting typically governs whether a temporary venue can adequately handle the transportation impact of a particular continuous event. Table 3-5 lists key characteristics of a continuous event.

Table 3-5
Distinguishing Operating Characteristics of a Continuous Event

CHARACTERISTIC
• Occurrence often over multiple days
• Arrival and departure of event patrons throughout the event day
• Typically little or no advance ticket sales
• Capacity of venue not always known
• Occurrence sometimes at temporary venues

Street Use Event

A street use event occurs on a street requiring temporary closure. Events classified under this category include parades, street races, and motorcycle rallies occurring in rural, urban, and metropolitan areas. These events generally occur in a city or downtown central business district; however, race events or motorcycle rallies may necessitate temporary closure of arterial streets or limited-access highways. Planned special event permitting guidelines and restrictions typically (1) influence event operations characteristics (e.g., location, street use event route, time of occurrence, etc.) and (2) govern whether a traffic management plan can mitigate the transportation impact of a particular street use event. Table 3-6 lists key characteristics of a street use event.

Table 3-6
Distinguishing Operating Characteristics of a Street Use Event

CHARACTERISTIC
• Occurrence on a roadway requiring temporary closure
• Specific starting and predictable ending times
• Capacity of spectator viewing area not known
• Spectators not charged or ticketed
• Dedicated parking facilities not available

Regional/Multi-Venue Event

A regional/multi-venue event refers to multiple planned special events that occur within a region at or near the same time. Individual events may differ by classification category. Example regional/multi-venue events include: (1) occurrence of a single-theme event requiring multiple venues to stage the event, (2) occurrence of a downtown parade or festival in the vicinity of a downtown fixed venue also hosting a special event, or (3) occurrence of special events at two fixed venues in a region at or near the same time. Concurrent planned special events require consideration as a regional/multi-venue event if traffic generated by different, competing special events use the same traffic flow routes (e.g., freeway/arterial corridors, local streets) or parking areas over the same time frame. As a result, stakeholders involved in planning and managing individual special events must, as a group, forecast and mitigate the global impact of concurrent special events on transportation system operations. Table 3-7 lists key characteristics of a regional/multi-venue event.

Table 3-7
Distinguishing Operating Characteristics of a Regional/Multi-Venue Event

CHARACTERISTIC
<ul style="list-style-type: none"> • Occurrence of events at multiple venues and at or near the same time • Events having a time specific duration, a continuous duration, or both • Overall capacity generally not known if continuous events or street use events are involved

Rural Event

A rural event encompasses any discrete/recurring event or continuous event

that occurs in a rural area. Events classified under this category include fairs, festivals, and events at rural amphitheater and race-track venues. These events indicate that rural events collectively have the event operation characteristics of discrete/recurring events at a permanent venue and continuous events with one notable exception; rural events take place in rural areas. Table 3-8 lists key characteristics of a rural event.

Table 3-8
Distinguishing Operating Characteristics of a Rural Event

CHARACTERISTIC
<ul style="list-style-type: none"> • Rural or rural/tourist area • High attendance events attracting event patrons from a regional area • Limited roadway capacity serving an event venue • Area lacking regular transit service. • Events having either a time specific duration or continuous duration

PROGRAM PLANNING



Program planning for planned special events involves activities unrelated to a specific event. This level of advance planning involves the participation and coordination of stakeholders having an oversight role in addition to agencies directly responsible for event operations planning. Products of program planning include establishing new institutional frameworks, policies, and legislation to monitor, regulate, and evaluate future planned special events. Stakeholders utilize program planning initiatives to more efficiently and effectively complete event operations planning, implementation activities, day-of-event activities, and post-event activities for individual, future planned special

events. In turn, post-event activities (e.g., participant evaluation, stakeholder debriefing meeting, evaluation report) performed for specific special events provide valuable input for on-going program planning activities in a region or jurisdiction.

Regional Level

Program planning for planned special events on a regional level concerns proactively improving travel management for all planned special events in a region. Program planning requires an institutional framework for generating and managing successful programs and initiatives. Some key considerations include:

- Role of oversight stakeholders
- Policy support
- Regional planned special events program

Stakeholder Roles and Coordination

Program planning for regional planned special events necessitates the involvement and coordination of stakeholders representing multiple jurisdictions. At the program planning level, the stakeholders include:

- Those agencies directly involved in planning and day-of-event travel management for special events. These include law enforcement agencies, transportation departments, transit providers, and regional organizations.
- Others who typically are not involved in transportation management, such as the event organizers and elected officials serving an oversight role.
- Typically, mid-to-upper level agency administrators that collectively form the planned special events oversight team.

The following five-step process represents a way of doing business that facilitates re-

gional coordination when a planned special event occurs:

- Step One: Identify the Stakeholders.
- Step Two: Identify a Lead Agency.
- Step Three: Maintain Communication.
- Step Four: Form Subcommittees.
- Step Five: Continue Communication.

While planned special events may be temporary, and the planning for those events may bring together a group of stakeholders only for that event, ongoing programs and initiatives can be used to address general special event needs on a continual basis. An institutional framework can be created either before an event takes place or based on the planning for a specific special event. This framework can be used on a continuing basis to allow easier coordination among agencies for future events and eliminates the need to re-establish working relationships, which have already been created.

Policy Support

In most instances, transportation and law enforcement agencies have no prohibitions from coordinating efforts with other agencies, especially for events expected to have an impact on that agency. However, there are instances where interagency agreements are helpful, or even necessary, for multi-agency cooperation.

While interagency agreements will vary based on state law and the culture of the agencies, there are some common issues they can address: (1) areas of responsibility and (2) funding issues.

Legislation provides the legal authority for a government agency to take certain actions. In many instances, activities involved in special events planning have already been addressed by legislation.

Regional Planned Special Events Program

A regional planned special events program is an ongoing process designed to address a region’s needs for managing special events. It is not a program put in place to address a specific special event, although a specific event may trigger the formation of such a program. The scope of such a program should focus on planned special events of regional significance. If an event can be wholly managed within and by a single agency or jurisdiction (e.g., through a planned special event permit program), then there is no need for the regional plan to come into effect.

The program will put in place the framework for handling regional planned special events. This would include the template for groups created to deal with specific special events, identification of funding to support such planning, and the identification of infrastructure improvement needs in the region to better manage special events.

The stakeholders in a regional program such as this will vary from region to region. Table 3-9 lists organizations that should be considered part of the program. Leadership of the program will vary by region, but the agencies most likely to take the lead include state DOTs, state law enforcement agencies, and MPOs.

Local Level

The development of a formal planned special event permit program marks a key program planning initiative to facilitate stakeholder coordination, compliance with community needs and requirements, and efficient event operations planning. Backed by guidelines and regulations specified in municipal ordinances, the program outlines a defined planning framework and schedule

for event organizers and participating review agencies to follow. It represents an *agreement* between participating public agencies (e.g., transportation, law enforcement, public safety, etc.) to ensure, through planning activities or review, that all planned special events meet a set of mutually agreed upon requirements for day-of-event travel management. A municipal permit represents approval, or agreement between a jurisdiction and event organizer, to operate a planned special event, and it includes provisions outside of travel management.

Table 3-9
Regional Program Stakeholder
Organizations

STAKEHOLDER ORGANIZATIONS
<ul style="list-style-type: none"> • State Department of Transportation • Metropolitan Planning Organization • State police/patrol • Toll agencies • Mass transit agencies • Municipal governments and police departments • County governments and police departments • Owners of large venues (e.g., arenas, stadiums, universities)

Some important considerations and applications of planned special event permitting include:

- Permitting proves particularly effective for less frequent continuous events, street use events, and rural events occurring at a temporary venue not having a known spectator capacity. These events place an emphasis on advance planning and public outreach to mitigate traffic operations deficiencies and community impacts.
- Jurisdictions may not require a permit for special events held at permanent venues, such as stadiums, arenas, and amphitheaters.
- Permitting allows jurisdictions the opportunity to engage the event organizer

at the beginning of the event operations planning phase.

- Public stakeholders can size-up the event operations characteristics of a proposed event in order to schedule adequate personnel and equipment resources to accommodate the event. Resources may include traffic control, security, and maintenance.
- From the event organizer's perspective, a special event permit application and associated regulations outlines a general approach toward successfully managing travel for the event, facilitates coordination with appropriate stakeholders, and gauges resource requirements on the day-of-event.

Permit Process

Initiation of the permit process for a specific planned special event begins with the submission of a completed special event permit application by the event organizer. The permit application represents a formal proposal by the organizer to stage a planned special event. In some cases, particularly those where the event organizer requests assistance from the jurisdiction in locating a suitable venue location or street use event route, the event organizer and pertinent public stakeholders may interact prior to application submission to review the proposed event and permit process.

Figure 3-5 presents a flowchart summarizing key event organizer and public agency actions throughout the special event permit process, from submitting a permit application to conducting the proposed event.

The special event permit process serves to scope, schedule, and direct event operations planning activities for proposed events. This reduces unnecessary delay in facilitating stakeholder coordination, developing

planning deliverables (e.g., traffic management plan, etc.), reviewing mitigation strategies, and mobilizing personnel and equipment resources required to stage a particular planned special event. Practitioners may expand and contract the process in order to best fit: (1) the area type and involved stakeholders, (2) the special guidelines and regulations unique to a particular jurisdiction, (3) the operations characteristics of a particular event, and (4) the purpose of a particular event, such as community events versus commercial, for-profit events involving event organizers from the private sector.

Application Components

The special event permit application serves to communicate event operations characteristics to a jurisdiction, thus permitting it to impose appropriate impact mitigation requirements and/or advise the event organizer to change event operation parameters. Key items include the event purpose that may signal the need to develop contingency plans in response to possible security threats or demonstrations. Information regarding event history and expected attendance assists in achieving a more predictable event travel forecast. The application should prompt the event organizer to indicate travel demand management initiatives, including use of carpools and other modes of travel.

Supplemental requirements to a special event permit application, required of the event organizer either at the time of initial application submission or after jurisdiction review of the application questionnaire, include:

- Event site plan
- Traffic flow plan
- Traffic control plan
- Parking plan
- Emergency evacuation plan

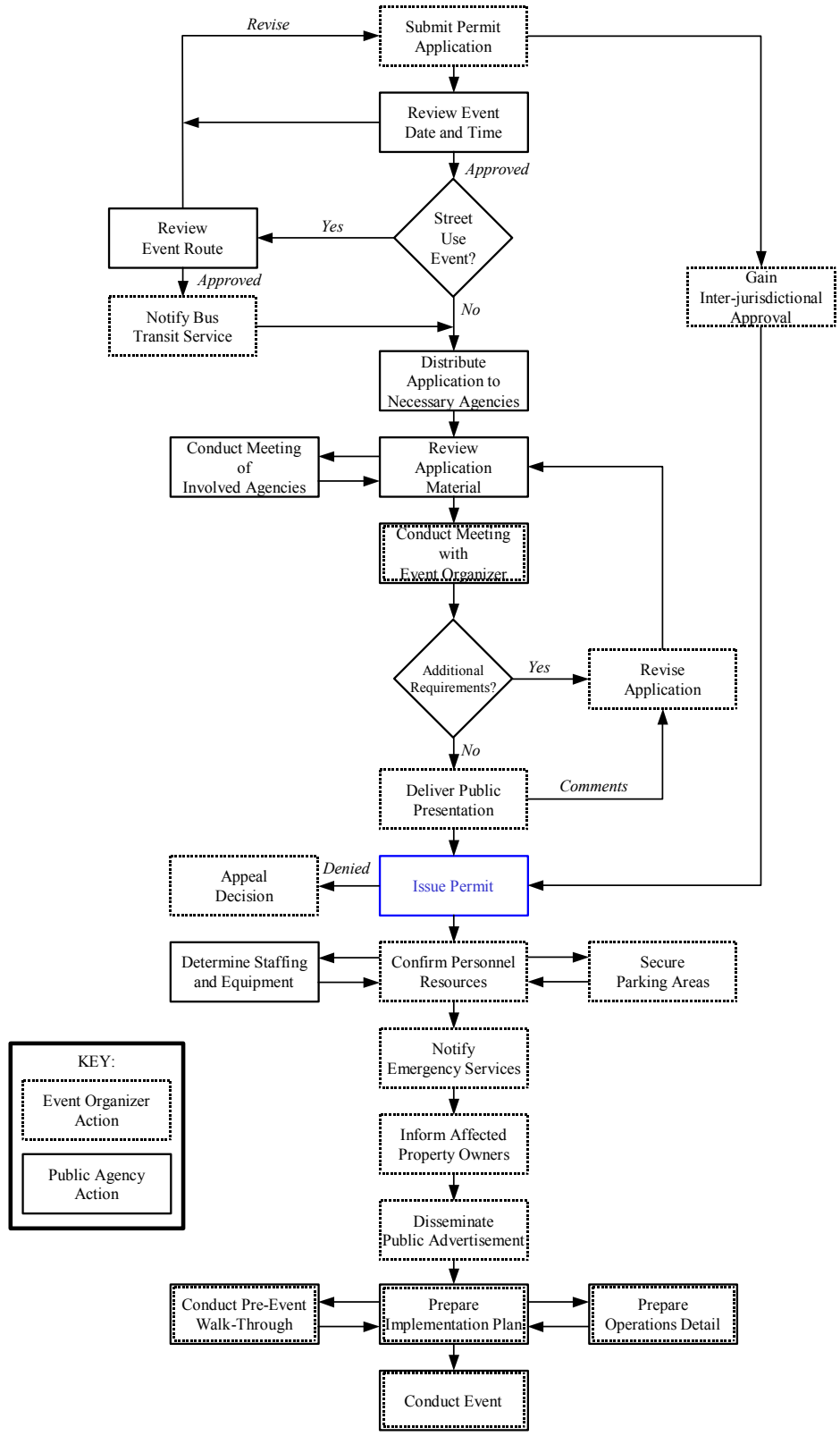


Figure 3-5
 Planned Special Event Permit Process

- Notice of event for affected property owners and residents
- Event advertising brochure
- Hold harmless agreement
- Certificate of insurance

Permitting Requirements

Jurisdictions maintain the following general requirements for planned special events: (1) event restrictions, (2) impact mitigation and traffic control, (3) legal, and (4) funding. As indicated in Table 3-10, the municipal codes of jurisdictions across the Nation specify a wide range of requirements for managing travel for planned special events, all of which become incorporated in the special event permit process.

Table 3-10
Municipal Code Provisions on Planned
Special Events

PROVISION
<ul style="list-style-type: none"> • Special event definition • Conditions for permit requirement • Permit restrictions • Content of permit application • Permit application submission and review deadline • Notification of city/town officials • Notification of abutting property owners and residents • Permit approval criteria • Event organizer duties • City/town authority to restrict parking and close local roads • Hold harmless clause • Insurance requirements • Recovery of expenses • Procedure for appealing a denied permit

EVENT OPERATIONS PLANNING



Event operations planning concerns the advance planning and stakeholder coordination activities conducted for a specific planned

special event. The two main steps of the operations planning process involves: (1) completing a feasibility study to forecast event-generated traffic and parking demand and to determine the associated impact on transportation operations during the event and (2) developing a traffic management plan to service event-generated automobile, transit, and pedestrian traffic and to mitigate predicted impacts to the transportation system serving the event venue and surrounding area. Travel demand management represents a key component of the overall advance planning process when forecasted traffic demand levels approach or exceed available roadway capacity.

Figure 3-6 presents 31 steps in the event operations planning process for all planned special events. The flowchart covers development and integration of the phase's three primary products: feasibility study, traffic management plan, and travel demand management initiatives. It represents a suggested order of event operations planning activities. However, as noted below, the event planning team can modify activities to create a dynamic and more effective planning process tailored to the scope of a specific planned special event:

- Based on lessons learned from past special events at a particular permanent venue, stakeholders may program new infrastructure or adopt new policies (e.g., parking restrictions) early in the event operations planning process.
- A jurisdiction planned special event permit process and requirements will scope, schedule, and direct event operations planning activities for continuous events and street use events.
- The event planning team should repeat process steps for individual venue events comprising a regional/multi-venue event.

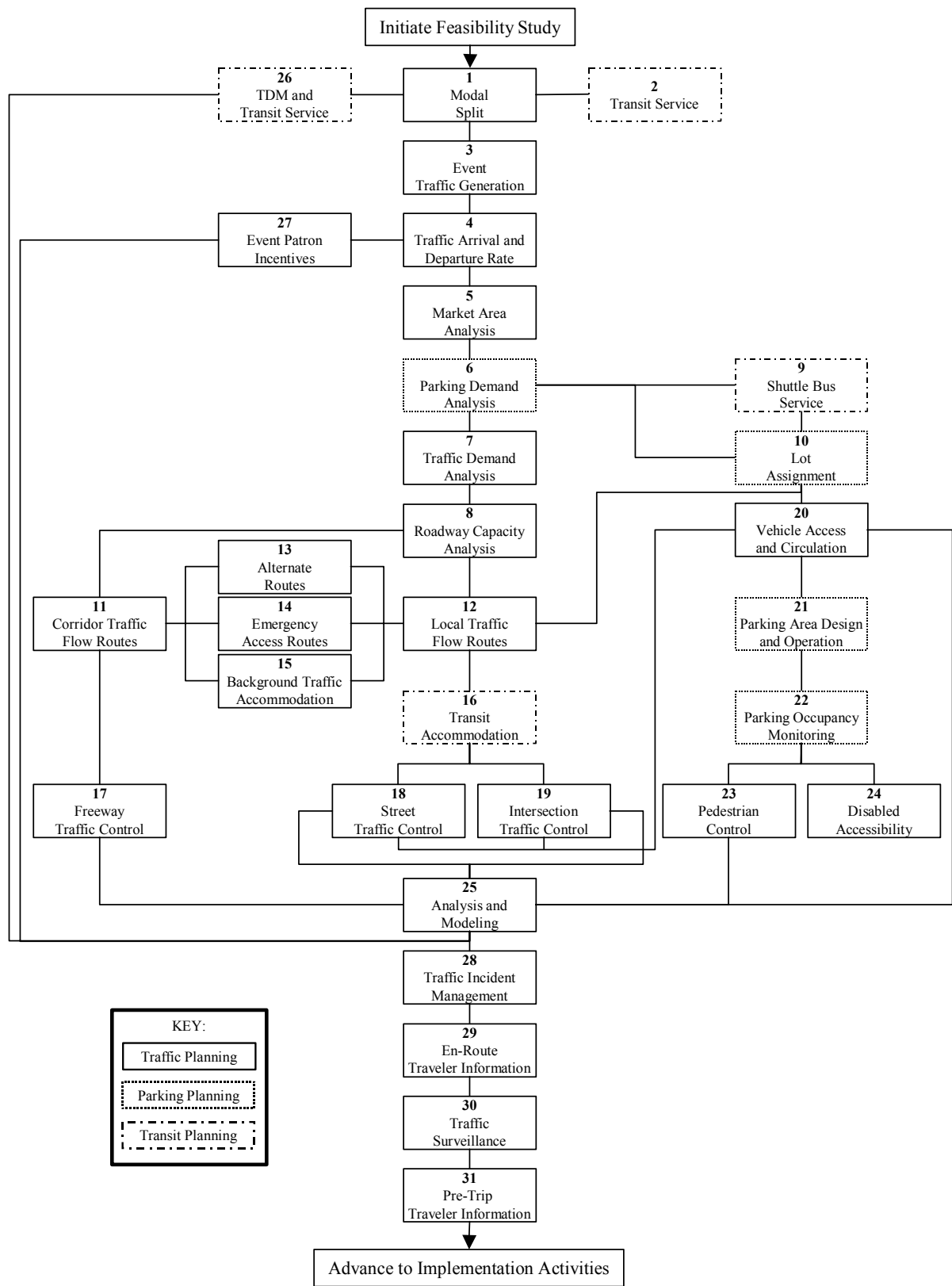


Figure 3-6
Event Operations Planning Process Flowchart

- Links between process steps are two-way as stakeholders evaluate alternative strategies and/or integrate traffic management plan components.
- The event planning team can develop different traffic management plan components concurrently.

Initial Planning Activities

This section examines key planning initiatives and special considerations in order to help guide the user through the first steps of the event operations planning phase. The event operations planning phase begins with stakeholders establishing a planning framework and schedule. The framework includes forming an event planning team, creating agreements, identifying performance goals and objectives, and deciding on mitigation assessment and approval protocol.

Special considerations evolve from reviewing the event operations characteristics of a particular special event (e.g., risk assessment) in addition to past successes and lessons learned. These considerations weigh heavy on traffic management plan requirements, and stakeholders must address issues affecting community residents and businesses through public outreach efforts early in the planning phase in order to ensure proper mitigation and non-conflict with traffic management plan specifications.

Stakeholder Roles and Coordination

The event planning team handles tasks associated with *event-specific operations planning* and *traffic management plan implementation*. The event planning team consists of a diverse group of stakeholders with either event operations or community interest as their primary concern. An event planning team forms as a result of either: (1) co-

ordination among a traffic operations agency, law enforcement, and event organizer that represent the core event planning team stakeholders or (2) designation by a committee on special events within a regional transportation management organization, such as a traffic incident management program.

- The former typically describes event planning teams formed in response to local planned special events affecting few jurisdictions, such as events occurring in rural or urban areas.
- The latter may occur in metropolitan areas where planned special events happen frequently, thus warranting an *on-call* event planning team.

A *regional transportation committee on special events* features stakeholders that have achieved interagency coordination through past, cooperative travel management efforts.

- Stakeholder representatives have firsthand knowledge of the roles, resources, and capabilities of each committee participant.
- Stakeholders commonly include traffic operations agencies, law enforcement, transit agencies, event organizers or venue operators, and the media.
- Committees in metropolitan areas may create task forces for specific planned special event venues or recurring planned special events (e.g., annual fairs, fireworks displays, parades, etc.). The committee or task force generally meets and performs event operations planning tasks on an as-needed basis. The group may also convene regularly (e.g., weekly, monthly, or quarterly) to review program planning efforts for future planned special events.

Risk Assessment

Based on the type and purpose of a planned special event, there exists potential scenarios where event patron or non-attendee behavior may cause overcrowded conditions in the vicinity of an event venue and/or create unplanned road closures. The event planning team must assess the nature of a proposed event and determine the need to incorporate special contingency plans in response to potentially dangerous situations that will interfere with the planned travel management on the day-of-event.

Table 3-11 lists four notable event-oriented

risk scenarios associated with some planned special events.

Performance Goals and Objectives

The goals of managing travel for planned special events include *achieving predictability, ensuring safety, and maximizing efficiency*. Table 3-12 states performance objectives, for specific classes of transportation system users, applicable to satisfying the overall goal of operations efficiency and safety. In meeting these performance objectives, the event planning team must target the goal of achieving predictability during

Table 3-11
Summary of Event-Oriented Risk Scenarios

EVENT-ORIENTED RISK	EXAMPLE SCENARIO
Demonstration or protest	<ul style="list-style-type: none"> Any event that is political in nature or invokes social concern. Political conventions and parades
Ticketless event patrons causing overcrowding	<ul style="list-style-type: none"> Sold-out sports championship games Sold-out concerts involving select performers
Fan celebration	<ul style="list-style-type: none"> Response to city or school sports team winning a championship.
Event patron violence	<ul style="list-style-type: none"> Motorcycle rally violence between patrons and/or participants.

Table 3-12
Transportation System Operations Performance Objectives for Planned Special Events

USER CLASS	PERFORMANCE OBJECTIVE
Event patron	<ul style="list-style-type: none"> Minimize travel delay to/from the event. Minimize conflicts between pedestrians and vehicles. Minimize travel safety hazards. Minimize impact of traffic incidents. Disseminate accurate, timely, and consistent traveler information. Increase automation of traffic control. Maximize site access service flow rates.
Non-attendee road user	<ul style="list-style-type: none"> Minimize travel delay on major thoroughfares, freeways and major arterials. Minimize impact on commuter and trucker travel time reliability. Maintain required parking and access for local residents and businesses. Maintain unimpeded access for emergency vehicles.
Transit user	<ul style="list-style-type: none"> Maintain scheduled travel times. Minimize transit bus dwell times. Maintain required transit station parking for non-attendee transit users.

the event operations planning phase. Table 3-13 presents common, easy-to-measure measures of effectiveness (MOEs) for assessing the performance objectives that describe traffic operations. The identified MOEs represent day-of-event performance evaluation data, useful for: (1) making real-time adjustments to the traffic management plan on the day-of-event, (2) conducting a post-event evaluation of transportation system performance, and (3) referencing during advance planning for future event occurrences.

Table 3-13
Measures of Effectiveness for Assessing
Performance Objectives

LOCATION	MEASURE OF EFFECTIVENESS
Venue parking areas	<ul style="list-style-type: none"> • Occupancy and turnover rate • Arrival and departure service rate • Time to clear parking lots
Intersections	<ul style="list-style-type: none"> • Vehicle delay • Queue length
Freeways and streets	<ul style="list-style-type: none"> • Travel time and delay • Traffic volume to capacity ratio • Traffic speed • Number and location of crashes and other incidents • Traffic incident clearance time

Planning Schedule and Deliverables

Figure 3-7 illustrates a high-level event operations planning schedule for an event planning stakeholder group. The figure lists advance planning activities and potential stakeholder meetings and public hearings in a timeline relative to the planning deliverables. The schedule indicates other stakeholder planning initiatives, such as the de-

velopment of a specialized transit plan to reduce event traffic demand.

The planning schedule provides a generic timeline, recognizing that actual event operations planning schedules vary considerably. For instance, some major, roving planned special events, such as the U.S. Golf Open, require an event operations planning phase spanning more than one year.

Public Outreach

Planned special events that may impact adjacent neighborhoods and businesses usually require public involvement to address related concerns. The public represents individual residents, businesses, and associated community groups. Public outreach activities initiated early in the event operations planning phase can reveal important issues that local residents and businesses may have. Specific neighborhood impact issues include heavy traffic demand on local streets and event patron use of available local on-street parking. Soliciting these concerns through public involvement, and addressing the issues in the planning process, can improve relations and day-of-event operations.

The event planning team and public stakeholders should identify potential problems prior to the development of the traffic management plan. These problems can be identified by first understanding the event scope with consideration given to current neighborhood traffic and parking restrictions, traffic management plans deployed during past planned special events, and identified problems experienced during past events. With this information, the public stakeholders can make informed decisions and provide valuable input to the event planning team.

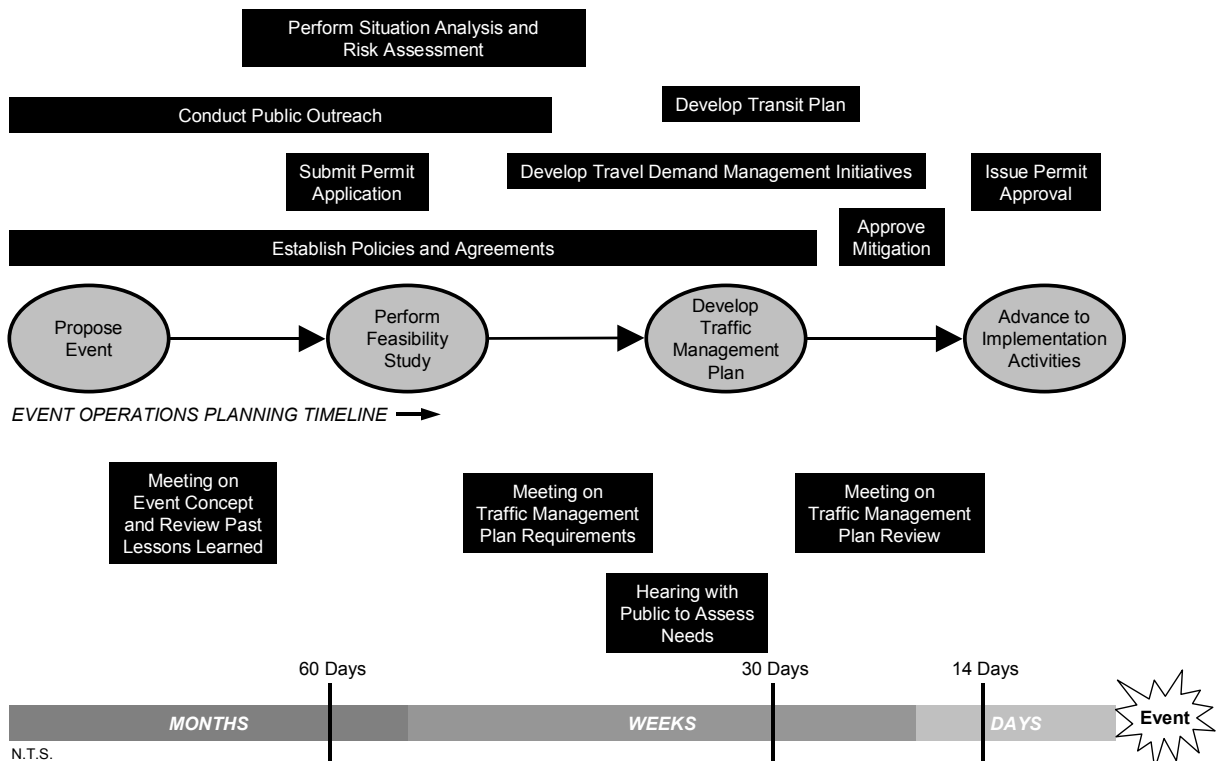


Figure 3-7
Event Operations Planning Schedule

Stakeholder Review of Planning Products

The event operations planning phase includes intermediate and final review periods for the event feasibility study and traffic management plan. Stakeholder review concentrates on the identification and proposed mitigation of event travel impacts. Effective and rapid stakeholder review of event operations planning products requires: (1) an annotated planning timeline, (2) a review process, and (3) performance standards. An annotated planning timeline proves effective for monitoring team progress. Adopting a formal review process reduces unnecessary delay in producing event operations planning deliverables required to stage a planned special event.

Policies and Agreements

The establishment of special policies and agreements to support planning and day-of-event management of planned special events facilitates efficient stakeholder collaboration and defines important event support stakeholder services that may be incorporated into a traffic management plan for a particular planned special event. These initiatives improve interagency relationships, clarify decision-making responsibilities and expectations, and secure on-call services and agency actions. Stakeholders may develop policies and agreements specific to a particular planned special event or for all planned special events in a region. Because of the potential significant time to develop and approve a particular policy or agreement, stakeholders should establish these initiatives early in the event operations planning phase or during the program planning phase.

Table 3-14 summarizes four types of policies and agreements involving stakeholders responsible for event operations planning and/or day-of-event operations.

Feasibility Study

The structure and approach of a planned special event feasibility study resembles a *Traffic Impact Study* required for planned developments, as illustrated in Figure 3-8. The figure shows the sequential steps in preparing a feasibility study for a planned special event.

Table 3-15 provides an overview of the first five feasibility study components. The accuracy of one analysis influences that of another. *Achieving predictability*, a goal of managing travel for planned special events, represents the focus of a feasibility study effort.

The feasibility study gauges the impact a proposed event has on traffic and parking operations in the vicinity of the venue. It determines if a particular planned special event will cause travel problems, where and when the problems will occur, and the magnitude of each identified problem using various MOEs. Initially, the study is con-

ducted *without* roadway capacity improvements or initiatives to reduce travel demand. Once the feasibility study identifies event travel problems, practitioners can take steps to mitigate transportation system deficiencies. These results define the scope of the traffic management plan required to successfully manage travel for a planned special event.

Travel Forecast

Travel forecast analysis involves estimating: (1) modal split, (2) event traffic generation, and (3) traffic arrival rate. Event planning team stakeholders that typically collaborate on this analysis include a traffic operations agency, traffic engineering consultant, transit agency, and event organizer.

Under the scope of a feasibility study, modal split concerns identifying the existing modes of travel event patrons will use to access the event venue site. Common travel modes include personal automobile, public transit, and walking. Public transit refers to scheduled bus transit or commuter rail. Transit agencies may assist in determining a base transit split, without service incentives or promotion, for patrons traveling to/from the event.

Table 3-14
Summary of Policies and Agreements Applicable to Managing Planned Special Events

ITEM	EXAMPLE APPLICATION
Interagency agreement	<ul style="list-style-type: none"> • Joint operations policy between stakeholders that establishes a shared role regarding event operations planning and day-of-event travel management. • Memorandum of understanding defining stakeholder roles and responsibilities. • Mutual-aid agreement facilitating resource sharing and/or reimbursement for services.
Standard street use event routes	<ul style="list-style-type: none"> • Routes established under the program planning phase for recurring street use events such as parades and races.
Toll facility congestion policy	<ul style="list-style-type: none"> • Suspension of tolls during periods of heavy congestion.
Public-private towing agreement	<ul style="list-style-type: none"> • On-call towing and recovery services during a special event.

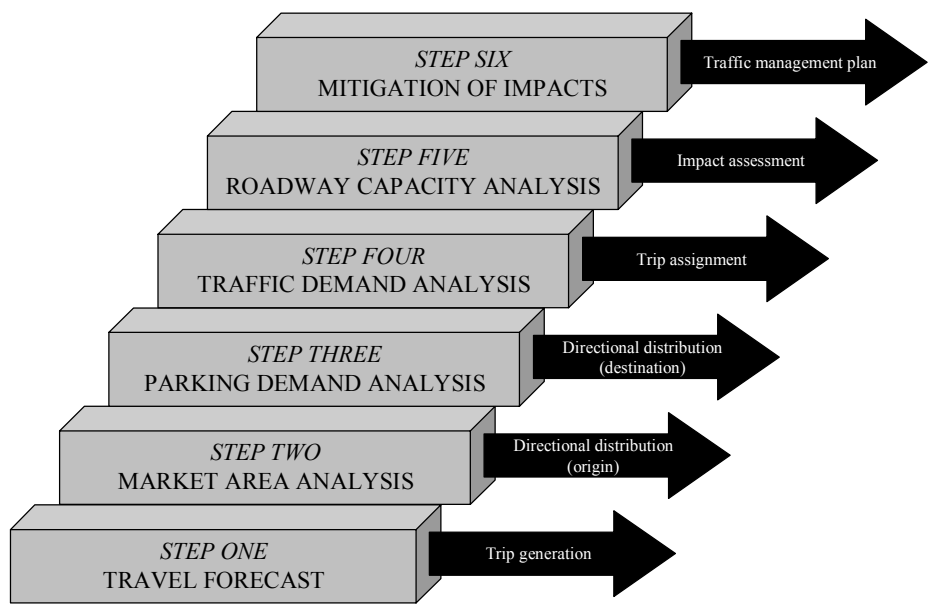


Figure 3-8
Feasibility Study Analysis Steps

Table 3-15
Feasibility Study Analysis Summary

COMPONENT	ANALYSIS	RESULT	APPLICATION
Travel forecast	• Modal split	• Number of trips by mode of travel	<ul style="list-style-type: none"> • Input into parking demand analysis. • Input into traffic demand analysis.
	• Event traffic generation	• Number of vehicle trips by personal automobile	
	• Traffic arrival rate	• Number of trips per unit of time	
Market area analysis	• Event trip origin	• Geographic location of event trip origins and percent split	• Input into traffic demand analysis.
Parking demand analysis	• Background parking occupancy	• Number of non-attendee vehicles per parking area and unit of time	• Input into event parking occupancy.
	• Event parking demand	• Number of event-generated vehicles per parking area and unit of time	• Input into traffic demand analysis.
Traffic demand analysis	• Background traffic flow	• Background traffic demand rate, adjusted for event-required road closures	• Input into roadway capacity analysis.
	• Event traffic assignment	• Event traffic demand rate per assigned route	
Roadway capacity analysis	• Section and point capacity	• Identification of capacity constraints and level of service	<ul style="list-style-type: none"> • Input into traffic management plan. • Input into travel demand management assessment.
	• Network operations	• Identification of bottleneck locations and saturation flow rates	

Unlike other traffic generators such as commercial developments, planned special event practitioners typically have advance knowledge of event attendance and, in turn, can develop traffic generation estimates via vehicle occupancy factors. Table 3-16 outlines a two-step process for forecasting event traffic generation. Input data includes a modal split estimate since the traffic generation forecast aims to estimate the number of event-generated trips by personal automobile. Vehicle occupancy factors can serve as the basis for estimating event-generated traffic.

In order to estimate peak traffic volumes generated by an event, practitioners must estimate the time and scope of peak traffic flow during event ingress and egress. Traffic arrival and departure rate indicates the peak period (e.g., hour or 15 minute) of event-generated traffic. The rate is used to determine the following key parameters for input into the traffic demand analysis: (1) peak period time and (2) percent of total event-generated traffic within the peak period. Event operation characteristics that influence traffic arrival and departure rates include:

- Event time and duration – e.g., specific start time, abrupt end time, continuous operation.
- Event time of occurrence – e.g., day/night, weekday/weekend.
- Audience accommodation – e.g., reserved seating, general admission.

- Event type – e.g., sports/concert, fair/festival, parade/race.

Market Area Analysis

A market area analysis identifies the origin and destination of trips to and from a planned special event. The analysis focuses on developing a regional directional distribution of event patron trips to/from an event site via personal automobile. The site refers to the collective parking areas serving the venue. A regional directional distribution specifies: (1) the freeway and arterial corridors serving the venue site and (2) the percent split and volume of event-generated automobile trips traversing each corridor.

Table 3-17 summarizes three analysis methods used to define a planned special event market area.

Parking Demand Analysis

A parking demand analysis functions to determine the amount of required parking for event patrons in the vicinity of the event venue. A parking occupancy study drives the overall analysis and determination of event parking areas. This study indicates the level of parking spaces occupied, relative to lot capacity, at intermittent time intervals. It also specifies an estimate of peak parking demand, a figure particularly useful for managing continuous events where parking space turnover occurs throughout the event day.

Table 3-16
Traffic Generation Forecast Process

COMPONENT	DETAIL
Input data	<ul style="list-style-type: none"> • Daily attendance • Percent automobile trips • Vehicle occupancy factor
Method	<p><i>Step 1.</i> (Daily Attendance) x (Percent Automobile Trips) = Person Trips Via Automobile</p> <p><i>Step 2.</i> (Person Trips) / (Vehicle Occupancy Factor) = Vehicle Trips</p>
Result	<ul style="list-style-type: none"> • Number of vehicle trips by personal automobile both to and from the event

Table 3-17
Market Area Analysis Methods

METHOD	DESCRIPTION
Travel time analysis	<ul style="list-style-type: none"> Determine population distribution within travel time threshold of event venue.
Distance analysis	<ul style="list-style-type: none"> Determine population distribution within distance radius of event venue.
Origin location analysis	<ul style="list-style-type: none"> Determine weighted distribution of known origins by place or zip code.

Figure 3-9 presents a parking demand analysis process used to determine the adequacy of event venue (on-site) parking and the identification of appropriate off-site parking areas. The flowchart denotes an analysis conducted for a one-time interval. Practitioners should perform an iterative parking demand analysis, over hourly time periods as necessary, if considering parking areas characterized by high background parking turnover.

Traffic Demand Analysis

A traffic demand analysis determines: (1) a local area directional distribution and (2) the overall assignment of event-generated traffic. This analysis references results obtained through the travel forecast, market area analysis, and parking demand analysis.

The local area directional distribution indicates freeway ramps and intersections, including turning movements, traversed by event-generated traffic arriving to or departing from a planned special event. The regional directional distribution, as determined in the market area analysis, quantifies the percentage of event patron trips (e.g., origins) by regional freeway and arterial corridor, and the planned special event parking areas, as determined in the parking demand analysis, represent *sink nodes* or location of trip destination.

Traffic demand analysis includes developing composite background and event-generated traffic projections for all roadway system

facilities serving the event venue. Composite traffic volumes expressed as an hourly (or sub-hourly) rate meet roadway capacity analysis input requirements. These rates identify the peak hour capacity analysis periods during event patron arrival and/or departure. Practitioners must adjust background traffic volumes to account for displaced and diverted traffic due to road closures required to stage the planned special event.

As a preliminary step to assess the need to perform a detailed roadway capacity analysis, draw a circular screen line (e.g., 0.5 to 1 mile radius) around the event venue site. Note each roadway segment intercepted by the screen line, and estimate the segment's capacity in each direction of travel. Create a chart of hourly composite traffic volumes for each identified segment, and assess capacity deficiencies in both directions of travel.

Roadway Capacity Analysis

A roadway capacity analysis uses traffic demand analysis results to measure the impact of a proposed planned special event on roadway system operations. At the feasibility study level, a roadway capacity analysis references existing roadway facility operations and capacity (e.g., no reverse flow operation or other capacity enhancements). The analysis assumes pedestrian access management strategies will minimize pedestrian/vehicular conflicts, and parking area

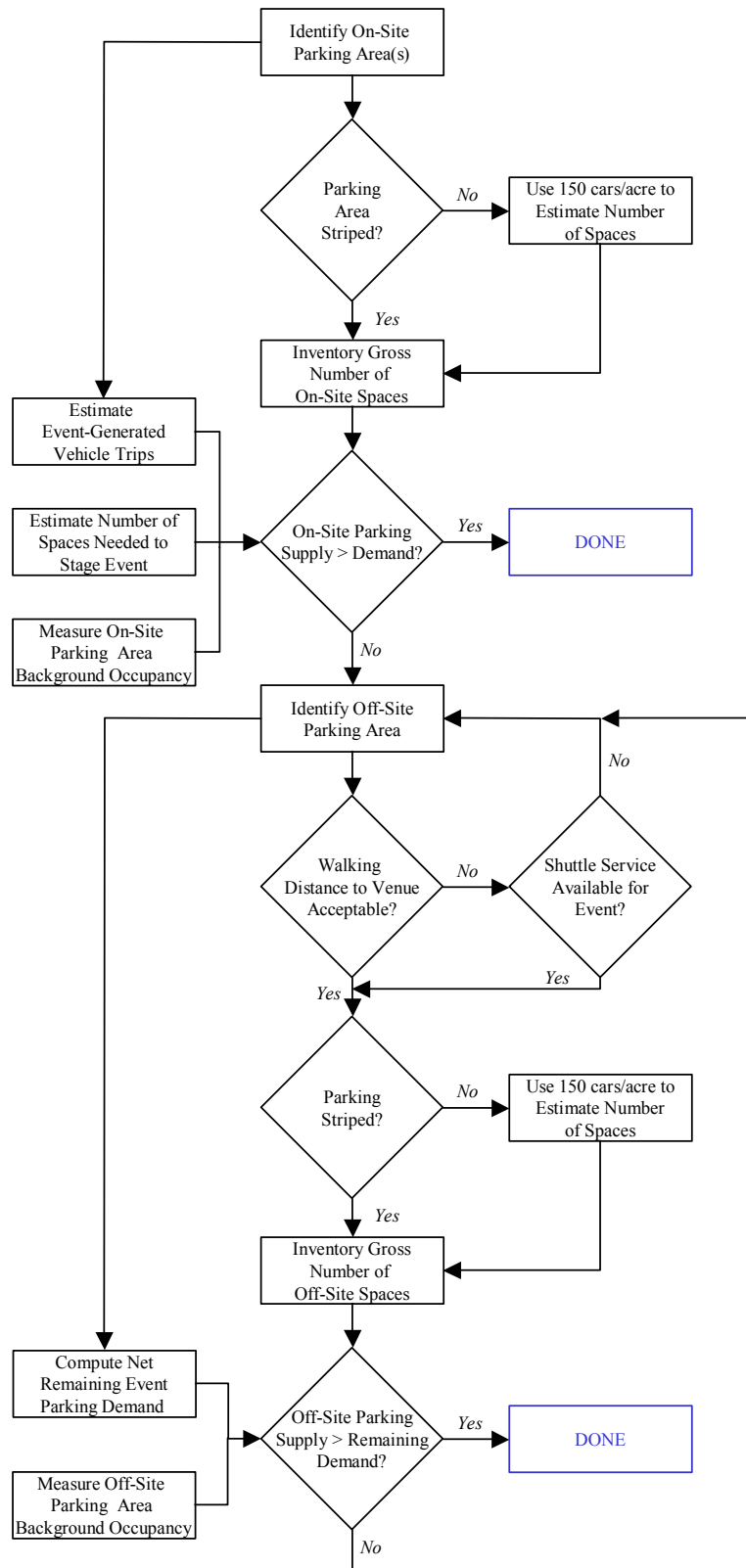


Figure 3-9
Parking Demand Analysis Process

access points provide sufficient service flow rates through proper design. Regardless of capacity analysis outcome, pedestrian accommodation and parking management represent key considerations in a planned special event traffic management plan.

Roadway capacity analysis involves freeway segments, freeway junctions such as ramps and weaving areas, street segments, signalized intersections, and unsignalized intersections. To evaluate these facilities, practitioners can employ one of two approaches: (1) analyze section and point capacity using Highway Capacity Manual recommended methodologies or (2) analyze network operations using a computer traffic simulation model.

Mitigation of Impacts

Mitigating anticipated planned special event impacts on travel represents the ultimate goal of conducting a feasibility study. The mitigation of congestion and potential safety impacts identified through a feasibility study requires development of a traffic management plan and complementing travel demand management strategies. In turn, practitioners can utilize the tools and techniques used to determine feasibility study results in order to evaluate various mitigation strategies and determine if the selected strategies adequately mitigate identified transportation system deficiencies.

Table 3-18 lists numerous tools for mitigating planned special event impacts on local roadway and regional transportation system operations. In meeting the overall travel management goal of *achieving efficiency*, these tools target utilizing the excess capacity of the roadway system, parking facilities, and transit.

Traffic Management Plan

A traffic management plan indicates *how* traffic, parking, and pedestrian operations will be managed on the day-of-event. The plan contains strategies and tactics for mitigating travel impacts identified in a planned special event feasibility study analysis. It also accommodates planned travel demand management initiatives aimed at improving transportation system operations on the day-of-event.

The scope of a traffic management plan varies for each planned special event, even for events happening in the same jurisdiction or region. Different strategies and tactics are successful in handling different categories of planned special events occurring in metropolitan, urban, and rural areas. A successful traffic management plan satisfies both the: (1) customer requirements of all transportation system users and (2) allotted budget for personnel and equipment resources assigned to the day-of-event operation.

The key components of a traffic management plan for planned special events include:

- Site access and parking plan
- Pedestrian access plan
- Traffic flow plan
- Traffic control plan
- En-route traveler information plan
- Traffic surveillance plan
- Traffic incident management and safety plan

Special Considerations

The event planning team must create a flexible traffic management plan that accommodates modifications on the day-of-the-event as well as special considerations

Table 3-18
Tools for Mitigating Planned Special Event Impacts on Transportation System Operations

CATEGORY	EXAMPLE TOOLS
<i>Traffic Control and Capacity Improvements</i>	
Freeway traffic control	<ul style="list-style-type: none"> • Ramp closures or additional capacity • Alternate routes • Ramp metering
Street traffic control	<ul style="list-style-type: none"> • Lane control • Alternative lane operations • Road closures • On-street parking restrictions • Trailblazer signing • Parking management systems
Intersection traffic control	<ul style="list-style-type: none"> • Access and turn restrictions • Advance signing to improve traffic circulation • Traffic signal timing and coordination
Traffic incident management	<ul style="list-style-type: none"> • Service patrols • Tow truck staging • Advance congestion warning signs • Portable lighting
<i>Traffic Management</i>	
Traffic surveillance	<ul style="list-style-type: none"> • Closed circuit television systems • Field observation • Aerial observation • Media reports • Portable traffic management systems
En-route traveler information	<ul style="list-style-type: none"> • Changeable message signs • Highway advisory radio • Media • Static signing • Destination signing
<i>Travel Demand Management</i>	
Transit incentives	<ul style="list-style-type: none"> • Public transit service expansion • Express bus service from park and ride lots • Charter bus service
High occupancy vehicle incentives	<ul style="list-style-type: none"> • Preferred parking • Reduced parking cost
Event patron incentives	<ul style="list-style-type: none"> • Pre-event and post-event activities
Bicyclist accommodation	<ul style="list-style-type: none"> • Bicycle routes and available parking/lock-up
Local travel demand management	<ul style="list-style-type: none"> • Background traffic diversion • Truck diversion
Pre-trip traveler information	<ul style="list-style-type: none"> • Internet • Telephone information systems • Public information campaign • Event and venue transportation guide • Media

that surface prior to the planned special event.

Table 3-19 lists the various groups that either attend or have a direct interest in a planned special event. Throughout the traffic management plan development process, the event planning team must regularly monitor and communicate any special considerations that arise in conjunction with the needs of the groups attending the event.

Table 3-19
Groups Attending a Planned Special Event

GROUP
<ul style="list-style-type: none"> • Participants • Spectators • Event sponsor • Dignitaries • Media • Non-ticketed visitors • Street vendors

Contingency Planning

Contingency planning represents *event insurance*. While stakeholders may consume additional time and resources during advance planning for a planned special event, the availability of contingency plans helps mitigate a potential systemic breakdown of the transportation system during an unexpected event occurring at or near the same time as the planned special event. Key steps in contingency planning include:

- Develop a traffic management plan that is *scenario-based*.
- Consider and plan for a range of possible unplanned scenarios. Table 3-20 provides a contingency plan checklist for planned special events.
- Determine changes in operation due to unplanned scenarios.

Table 3-20
Contingency Plan Checklist

CONTINGENCY
<ul style="list-style-type: none"> • Weather <ul style="list-style-type: none"> ○ Severe weather outbreak ○ Flooding on event site access routes ○ Flooding in event parking areas ○ Parking during wet weather • Security threat • Major traffic incident • Delayed event • Event cancellation • Absence of trained personnel and volunteers on the day-of-event • Equipment breakdown • Demonstration or protest • Unruly spectator behavior • Overcrowding • Event patron violence

Site Access and Parking Plan

A site access and parking plan contains operations strategies for managing automobile, bus, taxi, and limousine traffic destined to and from the following areas in the vicinity of a planned special event venue: (1) public parking area, (2) reserved (permit) parking area, (3) overflow parking area, and (4) pick-up/drop-off area. The event planning team must create a flexible plan that contains proactive strategies for responding to real-time event patron travel patterns driven by their choice of public parking areas, especially if parking fees vary from lot to lot. Traffic destined to the three other site areas has a fixed ingress and egress pattern as specified in the plan through lot assignments and permitted movements.

Site access and parking plan development involves a three-step process: (1) access, (2) process, and (3) park:

- Access refers to getting event traffic from the adjacent street system to their destination, such as a parking area or

pick-up/drop-off area, during ingress and vice versa during egress. The traffic management team manages the access operations component.

- Process involves activities necessary to “approve” vehicles for entry into a parking area. A fee transaction between a parking area operator and motorist represents a common process activity.
- Park involves handling vehicles from a process point to a parking space. A parking team and associated volunteers operate the process and park components. A breakdown in any one of the three components can result in congestion extending to the adjacent street system and possibly to freeway and arterial corridors serving the planned special event.

In order to facilitate safe and quick spectator and participant travel to/from the event site, the site access and parking plan should specify tactics that prevent potential congestion on parking area access roads and allow for good circulation on roadways surrounding the event site. Table 3-21 indicates site access and circulation considerations applicable to the development of a site access and parking plan.

The objective of designing and operating parking areas involves providing an access point capacity in excess of the peak rate of traffic flow that traverses the driveway. Any planned special event parking area that requires a fee or permit for access has a service facility in-place to process vehicles entering the lot. Therefore, a first-in-first-out queuing system exists.

Queuing happens when the arrival rate exceeds the service rate. The arrival rate denotes the number of vehicles traversing a single parking area access point over some period of time. The service rate is the number of vehicles the service facility can process over some period of time. The magnitude of this rate depends on the number of servers (e.g., staff or automated gates) that comprise the service facility and server efficiency. A parking area queuing system operates stochastically. Traffic arrival rates will vary, and individual transaction times that collectively determine the service rate will also vary. In designing a service facility for a planned special event parking area, select a conservative server service time (e.g., the time to serve one vehicle) and determine the required number of servers that can process the maximum anticipated arrival rate with one server on break.

Table 3-21
Site Access and Circulation Considerations

CONSIDERATION	TACTIC
Parking area ingress	<ul style="list-style-type: none"> • Right turn circulation pattern • Contraflow operation • Shoulder utilization • Lane channelization • Parking area overflow access points
Pick-ups and drop-offs	<ul style="list-style-type: none"> • Use of off-street areas • Designation of pick-up/drop-off areas to avoid conflict with primary traffic ingress/egress routes • Storage area
Parking area egress	<ul style="list-style-type: none"> • Right turn circulation pattern • Preservation of adjacent street flow • Provision of rapid parking area unloading

Parking operators and volunteers must meet the following two requirements for parking vehicles:

- Park vehicles at the same rate as those being processed.
- Minimize pedestrian/vehicular conflicts inside parking areas.

The event planning team should design a site and parking plan to service both the traffic management team and event patrons. Pre-trip traveler information dissemination (via media, websites, mailings, brochures) should include elements of the site and parking plan. Table 3-22 contains a site and parking plan development checklist.

Pedestrian Access Plan

A pedestrian access plan provides for the safe and efficient movement of pedestrians within the immediate area of the venue. This includes accommodating pedestrian trips to/from several mode transfer points in a planned special event activity network. These points include site parking areas, transit stations, express/charter bus stations, shuttle bus stations, and pick-up/drop-off areas. Moreover, some event patrons may make their entire trip, originating from home or work, on foot. In meeting the managing travel for planned special events goal of *ensuring safety*, the event planning team must develop a plan that: (1) accommodates pedestrians accessing an event via a network of safe walking routes and (2) minimizes pedestrian/vehicular conflicts.

A successfully implemented pedestrian access plan for planned special events permits *rapid dispersion* of pedestrian flow. Although high pedestrian volumes encompass the immediate venue area during ingress and egress, the plan effects efficient access through a radial network of pedestrian

routes. It also includes time-sensitive strategies to minimize overcrowding conditions at venue gates and mode transfer points. The plan also considers a continuous shuttle bus service operations detail to handle event patrons destined to/from satellite parking areas and transit stations not easily accessible by foot.

Pedestrian access routes are comprised of two components:

- A *routing* component, consisting of sidewalks or paths between street intersections.
- A *crossing* component, consisting of infrastructure or other vehicle control measure that allows pedestrians to cross a street safely.

Planned special event pedestrian management involves the implementation of integrated control tactics to facilitate pedestrian routing and crossing between a mode transfer point and the event venue.

Two strategies for managing pedestrian flow on walkways during planned special events include:

- Locating access route termini.
- Providing additional, temporary pedestrian walkway capacity.

Table 3-23 describes tactics for improving the safety and capacity of pedestrian street crossings. Use of a temporary pedestrian bridge represents an effective tactic for crossing wide streets or roadways where traffic throughput is emphasized. Temporary street closures during event egress allow the venue to empty faster and permits pedestrians to disperse to a number of adjacent mode transfer points and pedestrian access routes. Mid-block crossings not only

Table 3-22
Site and Parking Plan Checklist

ELEMENT	PROVISION
Event patron parking areas	<ul style="list-style-type: none"> • Highlight free, pay (state rates), and reserved (permit) parking areas. • Indicate lots where tailgating is permitted. • Show specific parking area access points and state restrictions. • Indicate number of entrance/exit lanes (or servers) at each access point. • Designate lots by a number or letter and provide lot-specific directions. • State time parking areas open, particularly if time varies by parking area. • Discuss features of each parking area (e.g., paved, staffed, lighting, security). • State estimated walking time from each parking area. • Indicate connecting pedestrian access routes. • Show overflow parking areas, state distance from venue, and indicate criteria for operation (e.g., sell-out). • Indicate parking areas for motorcycles. • Indicate parking areas for recreational vehicles (e.g., overnight parking). • Furnish map of available off-site parking areas. <ul style="list-style-type: none"> ○ Include information on street regulations (e.g., one- or two-way) and connections to freeways and major arterials. ○ State on-street parking restrictions. ○ Specify private parking area regulations (e.g., egress control). ○ Indicate location of entrance/exit points to off-street parking areas. ○ Include rates if available. ○ Show restricted off-site parking areas (e.g., residential neighborhoods, etc.)
Gate access information	<ul style="list-style-type: none"> • Indicate gate names as shown on event patron tickets.
VIP information	<ul style="list-style-type: none"> • Show VIP (e.g., official guest / sponsor) parking areas. • Show credential pick-up location. • Show hospitality areas.
Shuttle bus route and stations	<ul style="list-style-type: none"> • Display shuttle route and all stations. • State cost, and emphasize free services.
Drop-off / pick-up sites	<ul style="list-style-type: none"> • Show access points and circulation lanes for transit/taxi/limo/shuttle service. • Show exclusive bus lanes. • Show transit / express bus stations. • Indicate general drop-off / pick-up sites where turnaround is permitted. • Indicate valet parking drop-off. • Show disabled drop-off / pick-up site.
Other parking areas	<ul style="list-style-type: none"> • Show express/charter bus parking area. • Show limousine parking area. • Show media parking area. • Show venue employee parking area.
Disabled parking areas	<ul style="list-style-type: none"> • State specific location (e.g., first row) of disabled-only spaces in general parking areas. • Indicate number of spaces available.
Other considerations	<ul style="list-style-type: none"> • Show aerial map. • Promote advance purchase (permit) options. • Indicate towed vehicle (e.g., illegally parked) pick-up area. • Emphasize new provisions (e.g., new parking areas, etc.). • Present map in grid format for easy reference. • Prepare maps for different venue events if parking plan varies. • Draw map to scale. • Show private property. • Display landmarks. • Indicate municipal fireworks viewing areas.

Table 3-23
Pedestrian Crossing Tactics

TACTIC	APPLICATION
Temporary pedestrian bridge	<ul style="list-style-type: none"> • Provides uninterrupted flow. • Achieves total separation of pedestrians and vehicles. • Enhances pedestrian safety.
Street closure	<ul style="list-style-type: none"> • Provides uninterrupted flow. • Accommodates very heavy pedestrian volume. • Allows pedestrian dispersion. • Requires officer control.
Mid-block street crossing	<ul style="list-style-type: none"> • Provides interrupted flow. • Avoids pedestrian conflict with turning vehicles. • Requires officer control.
Staffed crossings	<ul style="list-style-type: none"> • Provides interrupted flow. • Accommodates light pedestrian volume.

reduce the likelihood of vehicle-pedestrian collisions, but accident severity as well.

The pedestrian access plan must accommodate disabled event patrons arriving via all travel modes serving a planned special event. This involves examining all routes that a disabled event patron may traverse and, in turn, ensuring the patron has an unimpeded path from mode transfer point to venue seat. Accessible pedestrian routes must: (1) maintain a minimum path width, (2) include curb cuts and temporary ramps for negotiating grade separations, and (3) conform to local Americans with Disabilities Act (ADA) regulations. If a particular route (e.g., from express/charter bus station or transit station) does not meet accessibility requirements, then accessible shuttles must operate between affected mode transfer points and accessible pick-up/drop-off areas.

A shuttle bus service should be operated continuously within the venue site area during event ingress and egress, with the service schedule revolving around event patron arrivals and departures. Common shuttle service to/from a planned special event venue include: (1) satellite parking area service, (2) transit station service, and (3) em-

ployee parking area service. A particular planned special event may involve multiple private and public (e.g., transit agency) shuttle service operators, all of whom must coordinate with the event planning team on service details and station locations. Successful shuttle bus services positively influence the travel mode or destination (e.g., off-site) choice made by persons traveling to and from a planned special event.

The end result in shuttle bus service design involves determining the required number of buses to meet expected ridership levels. Based on event category and associated operations characteristics, the number of shuttle buses needed during event ingress and egress may vary.

A temporary shuttle bus station will exist at both a mode transfer point and at the event venue. Station design and operations should facilitate the rapid loading and unloading of shuttle passengers without impacting adjacent traffic operations and pedestrian movement. Because of the high concentration of pedestrian traffic at the event venue during ingress and egress, venue station design is critical. On-site shuttle bus stations should: (1) facilitate easy shuttle bus access,

(2) provide a defined passenger waiting area, (3) promote an orderly queue formation, and (4) shield waiting passengers from adjacent vehicular and pedestrian traffic.

Table 3-24 lists pertinent pedestrian access plan informational elements of interest to event patrons and participants. A traffic flow map or traffic control plan, prepared as a traveler information tool, may contain callouts to pedestrian facilities and day-of-event control tactics.

Table 3-24
Pedestrian Access Plan Checklist

ELEMENT
<ul style="list-style-type: none"> • Show recommended pedestrian access routes. • Show pedestrian bridges and tunnels. • Indicate special pedestrian crossing tactics (e.g., street closure or mid-block crossings) • Show shuttle bus route, direction of travel, stop locations, and loading and unloading areas. • Show vertical connections between infrastructure levels (e.g., stairs, escalator, elevator, ramps). • Show designated pedestrian crossings at street use event venues. • Indicate special regulations. • Highlight pedestrian access routes and crossings suitable for disabled event patrons.

Traffic Flow Plan

The preparation of a traffic flow plan represents a required preliminary step to the design of a traffic control plan. The traffic demand analysis component of a feasibility study indicates the freeway/arterial corridors and local streets that event patrons will utilize to access the venue site area. In developing a traffic flow plan, the event planning team modifies predicted flow routes to maximize transportation system operating efficiency on the day-of-event while meeting public safety agency needs. In turn, a traffic control plan facilitates traffic flow on recommended flow routes through service-

enhancing strategies and tactics that handle forecasted event traffic demand on these routes.

The advantage of developing a traffic flow plan is two-fold:

- Allows the event planning team to influence and control event patron patterns of ingress and egress.
- Provides important advance information for event patrons and participants regarding *best access* routes to the event.

The traffic flow plan must account for two types of traffic flow routes: *corridor* and *local*:

- Corridor flow routes include the freeways and major arterial roadways serving the planned special event venue.
- Local flow routes traverse the street system adjacent to the event venue and service a particular parking area or pick-up/drop-off point.
- A *target point* represents the point of connection between corridor and local flow routes, characterized by a freeway interchange or major arterial intersection.
- On the day-of-event, the management of corridor flow routes typically involves surveillance and dissemination of traveler information regarding target point and local flow route operations. The traffic management team implements traffic control initiatives beginning at the target point and continuing along the local flow route.

Figure 3-10 describes a process for assessing corridor and/or local traffic flow routes. Traffic control strategies for increasing corridor route capacity include eliminating weaving areas or other ramp control tactics. Strategies for local routes include striping

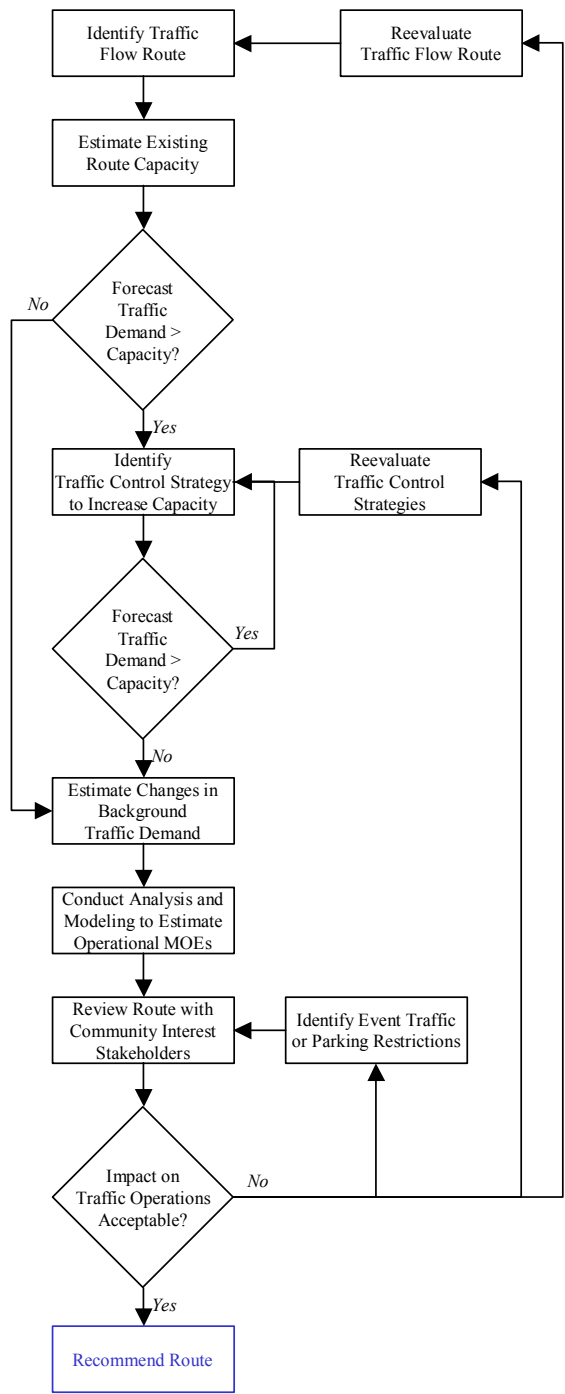


Figure 3-10
Traffic Flow Route Assessment Process

additional travel lanes to handle flow in the predominant direction, restricting turning movements, and revising traffic signal timing plans. The “Traffic Control Plan” sec-

tion describes these strategies and other mitigation alternatives in greater detail.

Other considerations involved in the development of traffic flow plans include:

- Emergency access routes
- Background traffic accommodation
- Transit accommodation

Emergency access route planning involves designating street closures or emergency access lanes within the venue site area to connect to some or all of the following termini: (1) public safety (e.g., fire and emergency medical service) headquarters, (2) local hospital, (3) freeway or major arterial serving a regional hospital, and (4) location of staged ambulances and first-aid stations for on-site medical treatment.

Table 3-25 presents a range of passive (e.g., traveler information dissemination only) and aggressive (e.g., physical traffic control) tactics for accommodating background traffic during a planned special event.

A traffic management plan that prioritizes bus flow to and from the venue site area positively influences the utility associated with transit and other travel choices involving express bus, charter bus, or shuttle bus transport. Transit agencies should operate on scheduled bus transit routes up until the last possible point to divert around a road closure required to stage a planned special event. This avoids user confusion and minimizes inconvenience to non-event attendees.

Table 3-26 lists tactics for accommodating scheduled and event-generated bus service.

The traffic flow plan serves stakeholders managing the planned special event in addition to event patrons and participants. The

Table 3-25
Tactics for Accommodating Background Traffic during Planned Special Events

USER GROUP	TACTIC	BENEFIT
Regional through traffic	<ul style="list-style-type: none"> • Freeway-to-freeway diversion beginning a significant distance upstream of an event venue. 	<ul style="list-style-type: none"> • Maintains mobility. • Reduces the level of background traffic on corridor flow routes serving the venue.
Local through traffic	<ul style="list-style-type: none"> • Arterial-to-arterial diversion 	<ul style="list-style-type: none"> • Eliminates non-attendee exposure to venue site area. • Discourages cruising around site area. • Allows public to become familiar with route after repeated implementation.
Neighborhood residents and businesses	<ul style="list-style-type: none"> • Parking restrictions 	<ul style="list-style-type: none"> • Permits resident access to on-street parking spaces. • Permits employee and customer access to public parking areas.
	<ul style="list-style-type: none"> • Traffic control points 	<ul style="list-style-type: none"> • Restricts neighborhood area access to residents and business employees.
	<ul style="list-style-type: none"> • Signing and alternate routes 	<ul style="list-style-type: none"> • Directs customers to businesses and other traffic generators.

Table 3-26
Bus Accommodation Tactics

TACTIC
<ul style="list-style-type: none"> • Exclusive bus route • Exclusive/priority bus lane • On-demand communication with TMC or command post

product of strategic route planning involves informing event patrons of best access routes to and from the planned special event. Stakeholders can communicate preferred route directions via: (1) event patron ticket mailings, (2) media public information campaigns, and (3) event, venue, or traffic information websites.

Table 3-27 contains a traffic flow plan development checklist.

Traffic Control Plan

Freeways represent corridor flow routes serving event patrons and participants destined to/from a planned special event from various parts of a region and beyond. These corridor flow routes connect to local, street-level flow routes that, in turn, serve event venue parking areas. A freeway interchange

marks the point of connection, or target point, between corridor flow routes and local flow routes. Together, the three entities comprise the roadway system servicing a planned special event. The scope of traffic control expands and contracts, proportionally to system performance, during event ingress and egress.

The main objective of freeway management during planned special events involves minimizing freeway mainline congestion. Freeway traffic control tactics implemented in response to local traffic flow or ramp operation degradation preserve freeway mainline operations. Freeway traffic control and management strategies for planned special events include traveler information dissemination and interchange operations.

Traveler information disseminated upstream of freeway interchanges serving an event venue effectively: (1) introduces all freeway users to critical traffic management plan components affecting traffic flow in the vicinity of the event venue and (2) facilitates freeway lane management as motorists learn of temporary freeway ramp control tactics

Table 3-27
Traffic Flow Plan Checklist

ELEMENT	PROVISION
Event patron corridor flow route	<ul style="list-style-type: none"> • Indicate recommended freeway ramps, by route direction, to/from event venue or specific parking area. • Indicate corridor target points representing a connection to local flow routes. • State freeway or arterial lane assignments for event traffic (e.g., event traffic two right-lanes). • Furnish information on roadway construction projects, as applicable, and indicate alternate routes. • Indicate modified ramp control tactics (e.g., closures/additional lanes). • Show freeway interchange configurations (and direction of travel) and exit numbers. • State tolls, if applicable.
Event patron local flow route	<ul style="list-style-type: none"> • Show connection to corridor flow route. • Indicate local streets that connect to freeway entrance/exit ramps. • Indicate recommended flow route to/from general and reserved parking areas (minimum) or individual parking areas (recommended). • Indicate one-way streets. • Show all road segment closures. • Specify permitted turning movements. • Emphasize controlled turn areas (turns prohibited or only one turn allowed). • List modified roadway striping (e.g., reversible lanes or contra-flow). • Indicate event participant/VIP access routes.
Traveler information	<ul style="list-style-type: none"> • Promote use of regional park & ride locations and event satellite parking areas. • Indicate commercial radio and highway advisory radio frequencies with event travel information. • Alert motorists of static and changeable message sign guidance along route. • Stress importance of following route and adhering to traffic control officer instructions.
Traffic management team information	<ul style="list-style-type: none"> • Include contingency maps detailing routes to overflow parking areas. • Provide written directions for diverting corridor flow routes via local street system. • Indicate alternate routes for ingress and egress to same target point.
Other travel modes / user groups	<ul style="list-style-type: none"> • Show transit routes and state corresponding route number(s). • Show preferred taxi routes. • Indicate bicycle routes. • Indicate pedestrian routes.
Other considerations	<ul style="list-style-type: none"> • Provide information on both ingress and egress flow routes. • Emphasize law enforcement endorsement of recommended routes and directions. • State travel times (by mode of travel) and distances (e.g., from select origins) • State when special traffic flow routes go into effect and terminate. • Disseminate written ingress/egress driving directions. • Indicate potential points of confusion (“do not take”) along recommended route (e.g., freeway exits, turning movements). • Indicate heavy vehicle restrictions. • Indicate expected congested/non-congested areas. • Use callouts to highlight critical movements. • Label all streets and freeways. • Color-code recommended routes to specific parking areas. • Emphasize new provisions (e.g., new road closures or route). • Prepare maps for different venue events if parking plan varies. • Show parking areas. • Show venue gates. • Draw map to scale. • Show private property. • Display landmarks.

and/or downstream lane closures that warrant a lane-change.

Management of freeway interchange operations for planned special events involves maximizing ramp capacity and preventing freeway mainline congestion. Table 3-28 presents interchange operations tactics for planned special events.

The central traffic control strategy for local flow routes serving a planned special event involves *emphasizing throughput*. Tactics that increase street capacity include a combination of: (1) on-street parking restrictions, (2) vehicle travel on road shoulders, and (3) alternative lane operations. Streets connecting freeway/arterial corridor routes and venue parking areas characteristically serve a predominant directional traffic flow during ingress and the reverse flow during egress.

Alternative lane operations comprise two categories:

- Reversible lane operation
- Contraflow operation

The application of alternative lane operations to streets during a planned special event creates an express route between an event venue and high-capacity freeway/arterial corridors. Three key elements in developing an alternative lane operations plan include lane balance, markings, and enforcement.

The management of traffic traversing a local flow route on the day-of-event involves route guidance and monitoring of traffic control initiatives.

The event planning team should design special route marker signs for guiding motorists

to venue parking areas and pick-up/drop-off locations. Each route marker may consist of a color-coded letter or symbol. When erected along a local flow route, the route marker assemblies collectively trailblaze a route to the drivers' destination of choice. Signs that introduce each route marker should be placed on all freeway and arterial corridors serving the event venue.

The deployment of a portable traffic management system(s) (PTMS) provides a traffic management team with the capability of monitoring traffic operations at critical roadway system locations in addition to disseminating updated traveler information at that location. Critical locations include target points connecting a corridor flow route and a local flow route or key driver decision points on the street network surrounding an event venue. Typical PTMS components include:

- Surveillance camera
- Changeable message sign
- Highway advisory radio
- Detection devices
- Weather sensor
- Flood lights
- Power source (e.g., solar)

Wireless communication via spread spectrum radio enables the traffic management team to view full-motion video from PTMS surveillance cameras.

A proactive approach toward developing strategies for controlling intersection traffic during a planned special event aims to:

- Increase intersection traffic handling capacity.
- Improve the orderly movement of traffic.
- Prevent crash occurrences.

Table 3-28
Interchange Operations Tactics for Planned Special Events

TACTIC	EVENT TIME	APPLICATION	BENEFIT
Rolling road block	Ingress	<ul style="list-style-type: none"> Initiate tactic on freeway mainline upstream of congested interchange ramp(s). 	<ul style="list-style-type: none"> Alleviates traffic demand at interchange, thus permitting street or ramp bottleneck to dissipate.
	Egress	<ul style="list-style-type: none"> Initiate tactic on freeway mainline upstream of a congested ramp junction or weaving area. Use tactic to meter freeway mainline traffic demand without creating a secondary bottleneck upstream of the congested area. 	<ul style="list-style-type: none"> Reduces level of congestion at the primary bottleneck location.
Entrance ramp closure	Ingress	<ul style="list-style-type: none"> Initiate tactic on ramps in close proximity to and upstream of interchange target point for event traffic. Divert affected traffic to another downstream access point. 	<ul style="list-style-type: none"> Eliminates congestion caused by traffic merging with heavy freeway mainline traffic.
	Egress	<ul style="list-style-type: none"> Initiate tactic as necessary to reduce freeway mainline congestion in the vicinity of closely spaced entrance ramps. 	<ul style="list-style-type: none"> Reduces freeway mainline congestion or prevents congestion from occurring.
Exit ramp closure	Ingress	<ul style="list-style-type: none"> Close ramp, as needed, to alleviate congestion on a downstream local flow route. Initiate only if a downstream exit ramp and local street system can handle diverted traffic. 	<ul style="list-style-type: none"> Reduces congestion on local flow route.
	Egress	<ul style="list-style-type: none"> Initiate tactic at freeway interchanges connecting local traffic flow routes that have special egress traffic control measures in effect. 	<ul style="list-style-type: none"> Prevents traffic from accessing local flow routes in the direction of the event venue that operate in favor of egress traffic flow.
Elimination of weaving area	Ingress	<ul style="list-style-type: none"> Close cloverleaf interchange entrance ramp to facilitate unimpeded diverge to access adjacent exit ramp. 	<ul style="list-style-type: none"> Eliminates weaving area congestion. Extends deceleration lane for traffic using exit ramp.
	Egress	<ul style="list-style-type: none"> Close cloverleaf interchange exit ramp and mainline right-lane to facilitate unimpeded merge with mainline. 	<ul style="list-style-type: none"> Eliminates weaving area congestion. Extends acceleration lane for traffic using entrance ramp.
Ramp metering	Ingress	<ul style="list-style-type: none"> Meter freeway entrance ramps upstream of interchange target point for event traffic. 	<ul style="list-style-type: none"> Reduces congestion caused by traffic merging with heavy freeway mainline traffic.
	Egress	<ul style="list-style-type: none"> Meter freeway entrance ramps downstream of interchange target point for event traffic 	<ul style="list-style-type: none"> Reduces congestion caused by traffic merging with heavy freeway mainline traffic.
Late diverge prohibition	Ingress	<ul style="list-style-type: none"> Deploy traffic cones along barrier line extending upstream of exit ramp gore area. 	<ul style="list-style-type: none"> Reduces congestion at diverge ramp junction caused by motorists attempting to make a sudden lane-change to access an exit ramp. Improves safety.
Additional exit ramp lane	Ingress	<ul style="list-style-type: none"> Cone an additional lane on exit ramps serving traffic destined to an event venue. 	<ul style="list-style-type: none"> Provides additional ramp storage capacity. Proves particularly effective if two-lane ramp traffic does not have to merge at downstream end of ramp.

The key to maximizing capacity involves simplifying traffic movements and minimizing the number of traffic signal phases. Stakeholders can also reduce the number of competing intersection traffic flow movements by initiating a planned road closure. Advance signing of permitted intersection movements improves the orderly movement of traffic.

The significant change in traffic volume and flow patterns at street intersections in the vicinity of a planned special event venue during event ingress and egress mandates a review of traffic signal timing plans during the event operations planning phase. Advance traffic signal operations planning involve developing event traffic signal timing plans. Traffic signal timing plans should exist for a range of contingency scenarios that prioritize either major street or minor street traffic movements. Methods to increase time for a specific movement include: (1) selecting an existing plan with a longer cycle length to increase the normal favored phase, (2) implementing a custom plan favoring a minor street phase (3) deploying a contingency “flush” plan, consisting of an extra long phase or cycle, to facilitate movement through a corridor, and (4) increasing time for a movement through manual traffic signal system operator control. In traffic signal system-controlled corridors carrying high traffic volumes on the day-of-event, system operators may enact simultaneous coordination, where all signals within a single corridor turn green at the same time.

The event planning team designs traffic control plans for use by the traffic management team and traffic control vendors. Table 3-29 contains a traffic control plan development checklist for freeway, street, and intersection management.

En-Route Traveler Information Plan

En-route traveler information can provide event patrons and other transportation system users with current roadway and transit information while traveling en-route. Information is typically provided via devices deployed along the side of the roadway, or from devices mounted on the dashboard of the vehicle. Along the roadway, CMS and HAR messages typically provide information regarding an upcoming planned special event, including current conditions related to the special event such as traffic congestion, incident and construction locations, weather advisories, parking availability, and alternate routes. In-vehicle and personal mobile devices can provide a variety of en-route traveler information to both the traveler as well as transportation providers.

Static signs can be used for event management to inform travelers of an upcoming planned special event, to identify park & ride lots, and to guide motorists to particular locations. It is not uncommon for agencies to use static signing in special event management for the following purposes:

- Notify travelers of a future special event.
- Notify travelers of future facility changes for the event such as lane closures or occupancy restrictions.
- Identify special alternate routes for the event.
- Guide travelers to parking or park & ride lots.

One of the most fundamental technologies available for disseminating traffic-related information from the roadside is that of changeable message signs. CMSs are sometimes referred to as dynamic message signs

Table 3-29
Traffic Control Plan Checklist

ELEMENT	PROVISION
Freeway control plan	<ul style="list-style-type: none"> • Specify maintenance and protection of traffic per MUTCD guidelines (e.g., location of traffic control equipment, equipment quantities, and safety signs). • Indicate ramp control and capacity modifications. • Highlight exclusive traffic flows (e.g., unimpeded merge, etc.). • Dimension weaving area, acceleration/deceleration lane lengths, ramp length. • Indicate potential bottleneck locations for surveillance monitoring.
Street control plan	<ul style="list-style-type: none"> • Show closed road segments. • Indicate directional lane control (e.g., alternative lane operations). • Show one-way streets. • Indicate number of ingress and egress lanes at each venue access point (e.g., parking areas, pick-up/drop-off points). • Show street use event route. • Indicate parking restrictions. • Indicate location of command post(s). • Integrate with signing plan (e.g., show route trailblazer signs).
Intersection control plan	<ul style="list-style-type: none"> • Specify maintenance and protection of traffic per MUTCD guidelines (e.g., location of traffic control equipment, equipment quantities, and safety signs). • Show permitted pedestrian movements and crosswalk locations. • Indicate approach lane designations and pavement markings. • Indicate traffic control. • Highlight exclusive/permitted traffic flows (indicate approach lane and corresponding receiving lane). • State special regulations (e.g., turn prohibition, exclusive bus lane, resident/permit only movement). • Show approach closures. • Indicate parking restrictions. • Indicate location of traffic control officers. • Indicate location of equipment storage area at intersection.
Signing plan	<ul style="list-style-type: none"> • Show location of permanent/portable changeable message signs. • Show location of permanent/portable highway advisory radio stations. • Indicate CMS/HAR message sets. <ul style="list-style-type: none"> ○ Default ingress and egress ○ Contingency scenarios • Show location of temporary static signs and message. • Indicate location of dynamic blank-out signs.
Equipment location plan	<ul style="list-style-type: none"> • State number of traffic cones, drums, and barricades required at designated locations. <ul style="list-style-type: none"> ○ Indicate equipment staging areas (e.g., shoulder, median, intersection corner) • Indicate location of equipment storage areas.
Other considerations	<ul style="list-style-type: none"> • Provide plans for both ingress and egress operation. • Indicate roadway construction zones. • Include table of quantities. • Show aerial map. • Draw map to scale. • Display landmarks.

or variable message signs. CMSs are programmable traffic control devices that can usually display any combination of characters to present messages to motorists. These signs are either: (1) permanently installed above or on the side of the roadway, (2) portable devices attached to a trailer, or (3) portable devices mounted directly on a truck and driven to a desired location.

Highway advisory radio is an effective tool for providing timely traffic and travel condition information to the public. It has various advantages and disadvantages. Its most important advantage is that it can reach more travelers, or potential travelers, than the other roadside technology, changeable message signs. While CMSs reach only those motorists at a particular point, and can only convey a short message, HAR has the advantage of being able to communicate with any person in the HAR broadcast range. Furthermore, the amount of information that can be conveyed to the user is much greater. Its primary disadvantage is that it is restricted to low power, and this can lead to poor signal quality (since many outside forces affect the signal, such as weather) and, therefore, poor listener levels.

The public has learned to depend upon the media to provide them with “almost” real-time traffic information. Commercial radio has proven to be a good means of providing travelers with traffic information both in and out of their vehicles. It is not uncommon for planned special event stakeholders, including public agencies, to partner with a commercial radio station (or for a commercial radio station to sponsor a special event) to enhance the information dissemination related to the event and its transportation conditions. Care should be taken to ensure that the information disseminated reflects current traffic conditions and is credible.

Other technology applications include:

- Cellular telephone-based systems
- 511
- In-vehicle displays
- Subscription services
- Personal data assistants

An en-route traveler information plan must be developed in concert with the traffic flow plan and traffic control plan. The success of any traffic management plan depends on disseminating correct information to motorists at the right time and location.

Detailed plans are necessary that identify the facilities and resources to be used. For instance, what permanent CMS or HAR are to be used and what holes exist in the information dissemination strategy? Where will portable devices be required? Traveler information plans must include planned message sets for equipment and technology used to disseminate en-route traveler information, including static signs, changeable message signs, highway advisory radio, and telephone information systems.

Traffic Surveillance Plan

A traffic surveillance plan can include:

- Closed-circuit television systems
- Field observation
- Aerial observation
- Media reports

Closed-circuit television surveillance is a very valuable planned special event management tool for observing real-time conditions related to special event corridors, alternate routes, parking and pedestrian conditions, as well as for a verification tool for messages placed on changeable message signs.

A common and efficient technique to observe the traffic conditions during a planned special event is to place human observers, or detectors, in the field, usually at critical locations. Normally, these observers have the role of monitoring conditions and reporting back to a central location for strategic assessment. These human detectors are gathering relevant information related to the event and using established protocol to communicate the information back to the central processing and coordination facility.

It is common to deploy these observers where technology is lacking and where they may perform an additional role in traffic management or traffic incident management (e.g., freeway service patrol operators).

Aerial surveillance has long been used to monitor the operation of the surface transportation network. “Observers” in aircraft (fixed wing or helicopters) fly over freeways and streets and monitor conditions in real-time, using two-way radios to communicate with the TMC or with service patrols on the freeway. This approach can be relatively expensive when one considers the expense of leasing or operating an aircraft, although it does have the benefit of being able to cover a large area.

The media needs to be a partner in the planned special event management and operations effort. Agreements must be in place that define their role within the plan, as well as what information needs to be communicated, both prior to and during the event.

Traffic Incident Management and Safety Plan

The occurrence of a planned special event that increases or disrupts the normal flow of traffic places a premium on the optimal use of existing facilities. A traffic incident and

safety plan specifies crash prevention tactics and traffic incident quick clearance initiatives, some of which denote special provisions enacted just for the day-of-event. These traffic incident management techniques preserve two goals of managing travel for planned special events: (1) ensuring safety and (2) maximizing efficiency.

Crash prevention tactics focus on improving driver awareness of surroundings and driver behavior. Table 3-30 lists crash prevention tactics applicable to planned special events.

Table 3-30
Crash Prevention Tactics

TACTIC
<ul style="list-style-type: none"> • Portable lighting • Congestion warning sign • Public information safety campaign • Enforcement

Portable lighting devices enhance driver understanding of traffic control and traffic flow patterns at night. Congestion warning signs, placed upstream of known roadway bottleneck locations, alert drivers of demand-induced congestion on the day-of-event. A public information safety campaign strives to change motorists’ behavior when traveling to and from a planned special event by emphasizing event traffic control and regulations, pedestrian safety, and vehicle operation. Enforcement aims at preventing drivers from executing illegal and dangerous movements in an effort to bypass congestion and/or day-of-event traffic control.

Service patrols can play a key role in traffic incident management for planned special events. The service has great versatility, and patrol operators can satisfy a wide range of traffic management team needs. For example, operators can assist in establishing day-of-event traffic control, performing traffic surveillance, providing timely traffic condi-

tion reports from various remote locations, and rapidly clearing traffic incidents.

A quick clearance practice consists of laws, policies, procedures, and infrastructure aimed at effecting the safe and timely removal of a traffic incident. Service patrols, as previously described, represent a quick clearance infrastructure component. Rapid clearance of traffic incidents during planned special event ingress and egress avoids significant impact to corridor and local traffic flow routes in addition to routes used by participants and VIPs.

The following quick clearance initiatives benefit traffic incident management in high-volume corridors, characteristic of planned special events: (1) vehicle/cargo removal laws and policies, (2) stakeholder open roads policy, and (3) public-private towing contracts.

Travel Demand Management and Traveler Information

Travel demand management represents a key component of the overall advance planning process when forecasted traffic demand levels approach or exceed available road capacity. TDM strategies may be warranted for planned special events occurring during peak travel times, continuous events located in downtown areas, street use events of long duration, regional/multi-venue events, and special events in rural areas having limited transportation system capacity. The goal is to optimize event patron and non-attendee travel through incentives aimed at consolidating person trips and altering user travel patterns and habits, while minimizing any penalties to the user.

The goal of transit operators involve designing a special event service and related incentives to not only improve the travel choice

utility associated with using transit, but also to exceed the utility (e.g., travel time, parking fees, comfort, etc.) associated with traveling via personal automobile. Successful transit services collectively may result in a significant change in event patron modal split without impacting service to non-attendee users.

The availability of pre-trip travel information, consisting of essential event operations and real-time traffic information, proves effective in assisting event patron evaluation of potential travel options, trip departure times, and travel routes to the event venue. Similarly, other road users, seeking to minimize event-related impacts to their trip, value this information.

TDM, transit, and pre-trip traveler information initiatives complement one another and work to reduce traffic on the roadway network in the vicinity of the event. These initiatives are not infrastructure improvements to increase capacity, but rather are methods that decrease vehicular traffic by providing event patrons with various travel choices as well as providing information that may lead to a reduction in traffic volumes.

Demand Management Strategies

Successful TDM strategies, developed to reduce the amount of event patron traffic, encourage carpooling and the use of alternate travel modes. TDM strategies may also influence the travel patterns of non-attendee road users by encouraging a trip time shift or a change in travel mode. The resulting reduction in traffic demand reduces travel times for both event patrons and non-attendee road users.

Table 3-31 contains a summary of travel demand management strategies.

Table 3-31
Travel Demand Management Strategies

STRATEGY	DESCRIPTION	TECHNIQUES	USER GROUP
High occupancy vehicle (HOV) incentives	<ul style="list-style-type: none"> Increase the number of persons traveling in each vehicle. 	<ul style="list-style-type: none"> Consider continuing HOV restrictions on HOV lanes to later weekday hours, or even into weekend hours, in order to encourage event patrons to carpool. Reduce parking fees for vehicles with more than two people. Provide free advertising for private lots to balance discounts given for HOV parking. 	<ul style="list-style-type: none"> Event patrons Non-attendee road users
Event patron incentives	<ul style="list-style-type: none"> Encourage event patrons to arrive early or leave late in order to reduce peak traffic demand. 	<ul style="list-style-type: none"> Consider departure strategies that encourage spectators to stay late after an event: <ul style="list-style-type: none"> Post-event fireworks or concert Special programming on stadium video screens "Meet the mascot" promotion for children Special discount with a ticket stub at nearby restaurants and pubs Extended parking, at no additional cost, for event goers to encourage their patronage of downtown restaurants and shops after an event. Consider arrival strategies that encourage spectators to arrive early before an event: <ul style="list-style-type: none"> Registration in free drawings and contests that occur before the event Early opening of venue restaurants and/or offering of special discounts Tailgating encouraged in venue parking areas Encouraging spectators to watch teams warm-up before the game 	<ul style="list-style-type: none"> Event patrons
Bicyclist accommodation	<ul style="list-style-type: none"> Encourage the use of bicycles in traveling to/from the event. 	<ul style="list-style-type: none"> Provide proper bicycle paths (existing and temporary). <ul style="list-style-type: none"> Maximization of safety for bicyclists Avoidance of roadways with higher traffic volumes due to the event Provide security in bicycle parking areas. <ul style="list-style-type: none"> Staffing to prevent bicycle theft Locate bicycle parking close to venue entrance. Provide bicycle racks on transit buses to allow spectators to access mass transit while carrying a bicycle. 	<ul style="list-style-type: none"> Event patrons
Local travel demand management	<ul style="list-style-type: none"> Increase the use of public transit. Encourage car pools. Shift work hours. Shift commercial truck travel routes and delivery schedules. 	<ul style="list-style-type: none"> Encourage alternate travel choices. <ul style="list-style-type: none"> Avoidance of travel during times of event ingress and egress Avoidance of travel near event venue Encourage businesses to implement TDM strategies. <ul style="list-style-type: none"> Telecommuting Carpooling Flexible hours Modified delivery schedules Early release from work on event dates for infrequent night events Use media to announce alternate routes to and around the event. Contact commercial trucking companies. <ul style="list-style-type: none"> Times to avoid routes serving the event venue Reduction of number of truck trips Shifting of some truck trips to nighttime (non-event) hours. 	<ul style="list-style-type: none"> Non-attendee road users

Transit Service

Modifications to existing transit service for a special event represent TDM strategies. The focus of the public transit agency is to increase ridership during the event by increasing the attractiveness of the service that it provides. In many locations and for many types of special events, additional ridership to and from special event sites can provide substantial additional revenue for the transit system at little additional cost. Also, transit system use may relieve traffic congestion around the venue.

Table 3-32 contains a summary of transit service strategies.

Pre-Trip Traveler Information

Various traveler information techniques are used to disseminate information to the public, including both event patrons and non-attendee road users, so they can be better informed when planning their trip to a planned special event, or around an event.

Table 3-33 lists techniques used to provide pre-trip information to the traveling public.

The primary function of pre-trip information involves assisting drivers with decisions regarding route planning, travel mode, and the time of day to travel. Accurate pre-trip travel information will provide benefits to all transportation system users in the form of time and cost savings.

Pertinent information that event patrons may want before beginning their trip include:

- Best driving route to the venue from specific origins (e.g., cities or freeways)
- Best public transit route
- Parking area locations and parking fees, access to disabled parking spaces, and times that the parking areas open before the event
- Recommended event ingress and egress routes, particularly if different for arrivals and departures

Table 3-32
Transit Service Strategies

STRATEGY	TECHNIQUES
Public transit service expansion	<ul style="list-style-type: none"> • Maximize use of public transit. <ul style="list-style-type: none"> ○ Existing service with additional vehicle hours ○ Modifying existing service by creating a route deviation with a stop near the event venue ○ Implementation of an express service to establish a special purpose route to and from the event site
Express bus service	<ul style="list-style-type: none"> • Discourage event patrons from driving their vehicles to the event site due to expected site parking deficiencies and anticipated roadway congestion. <ul style="list-style-type: none"> ○ Using express bus service between a park and ride facility or remote parking lot and event venue ○ Using park and ride lots that best intercept spectator traffic as it approaches the event site.
Charter service	<ul style="list-style-type: none"> • Use a contract service to provide transportation directly to the event site from outlying areas (e.g., other neighborhoods and cities). • Consider both charter bus operations as well as charter rail service.
Transit service marketing	<ul style="list-style-type: none"> • Establish a comprehensive transit marketing program. <ul style="list-style-type: none"> ○ Informing the public of the availability of public transit service to/from the event venue ○ Convincing the public to use the service

Table 3-33
Pre-Trip Traveler Information
Dissemination Techniques

TECHNIQUE
<ul style="list-style-type: none"> • Internet • Telephone information systems • Public information campaign • Event and venue transportation guide • Kiosks • Television • Newspapers • Changeable message signs • Highway advisory radio

- Up-to-the-minute roadway information (e.g., current traffic conditions and weather conditions)
- Estimated travel time by different travel modes
- Event information such as times and schedules
- Recommended speed/safety advisories
- Scheduled roadway construction and maintenance lane closures
- On-street parking restrictions during the event
- Heavy vehicle restrictions
- Expected delays leaving the event

IMPLEMENTATION ACTIVITIES

Implementation activities mark a transition phase between event operations planning and day-of-event activities. Therefore, the phase involves both the event planning team and traffic management team. This phase includes activities key to the success of any planned special event, including implementation plan development, stakeholder review and testing exercises, and personnel resource management and training. The underlying objectives of these activities are to: (1) improve the efficiency of traffic management plan deployment and (2) increase traffic management team preparedness. In turn,

this creates a more responsive traffic management team and fluid team operation, thus translating to better transportation system performance on the day-of-event.

Implementation Plan

An implementation plan details the actions required to put a traffic management plan into effect on the day-of-event. Its purpose is to: (1) define personnel assignments that indicate the roles and responsibilities of individual traffic management team personnel on the day-of-event, (2) describe a scenario-based, operations *game plan* at the management-level, and (3) communicate instructions and organize personnel at the field-level. It is intended for use by individual traffic management team personnel at the command post and in the field. While the traffic management plan indicates *how* traffic, parking, and pedestrian operations will be managed, the implementation plan describes the *what*, *when*, and *where* in terms of personnel and equipment resource deployment needed to execute traffic management plan provisions.

Table 3-34 presents an implementation plan checklist. All planned actions, even if not explicitly noted in the table, must include what, when, and where instructions. For multi-day or multi-venue events, traffic control strategies and resource deployment can be organized through matrices for easy reference.

Review and Testing

Review and testing allows the traffic management team to identify potential limitations of the traffic management plan *prior to* the day-of-event. With stakeholder agencies representing various jurisdictions and disciplines, review and testing promotes traffic management team coordination and in-

Table 3-34
Implementation Plan Checklist

ELEMENT	ACTION
Command post operation	<ul style="list-style-type: none"> • Indicate agencies staffing the command post in addition to the name and schedule of agency representatives. • Specify equipment needs and times of delivery and set-up. <ul style="list-style-type: none"> ○ Computers, networking, temporary phone and modem lines, televisions and radios, dry erase board or flipchart(s), message board, office supplies, furniture. • Indicate procedures for accessing the command post (e.g., clearing security) • Specify vehicle parking area and helicopter landing area.
Operations timeline	<ul style="list-style-type: none"> • Indicate command post location and hours of operation. • State parking, traffic control, and service patrol shifts. • State when egress plan goes into effect. • Specify parking area and venue gate open/close times. • Summarize the location and time (close/reopen) of planned full/partial road closures. • Include event schedule, such as event start time, event end time, and significant activities during the event (e.g., parade detail and headline entertainment schedule). • State times of sunrise and sunset, if applicable to traffic control measures (e.g., use of portable lighting).
Operations management	<ul style="list-style-type: none"> • Indicate scenario-based criteria for implementing traffic management plan components (e.g., traveler information message sets, traffic flow routing, reversible lane operations, etc.) • Include a series of operations details for sequential time segments on the day-of-event. • Specify contingency plans – indicate available plans and associated equipment/personnel resource deployments and changes in traffic management team command. • Indicate procedure for revising the traffic management plan on the day-of-event. • State protocol for terminating traffic and parking management detail. • Summarize traffic management plan changes since previous event.
Contact information	<ul style="list-style-type: none"> • State contact information for individual traffic management team members. <ul style="list-style-type: none"> ○ Home phone, work phone, cell phone, pager number, fax number, e-mail address, unit/radio assignment, rank, detail assignment, vehicle assignment. • Include contact information for agencies involved in contingency plan deployment.
Communications	<ul style="list-style-type: none"> • List radio call-sign of traffic management team members. • Indicate guidelines and restrictions regarding use of various radio channels or talkgroups (e.g., field-to-field communications, field-to-command post communications, non-event communications).
Traffic management team organization	<ul style="list-style-type: none"> • State agency duties, responsibilities (e.g., traffic control, traffic signal operation, traveler information device operation, etc.), and jurisdiction. • Specify highest-ranking agency representative on the day-of-event in addition to mid-level (e.g., zone) managers. • Summarize chain of command.
Equipment and infrastructure management	<ul style="list-style-type: none"> • Mandate pre-event equipment check (e.g., CMS operation). • Specify locations and quantities of traffic control and other support (e.g., portable lighting) equipment. Indicate equipment owner and, if applicable, power source. • Indicate equipment delivery, installation, and removal schedule in addition to personnel assignments. • Indicate schedule and location (zone) assignment of available equipment maintenance crews on the day-of-event. • Include equipment operating instructions (e.g., remote HAR programming). • Indicate temporary static sign locations and descriptions. • Specify planned traveler information message sets (e.g., CMS and HAR). • Specify personnel responsible for monitoring and programming traveler information devices on the day-of-event.

Table 3-34 (cont'd)
Implementation Plan Checklist

ELEMENT	ACTION
Equipment and infrastructure management (cont'd)	<ul style="list-style-type: none"> • Indicate protocol and personnel charged with implementing different traffic signal timing plans as needed on the day-of-event. • Indicate protocol and personnel charged with monitoring traffic surveillance equipment (e.g., CCTV). • List available maintenance personnel and equipment resources.
Location-specific traffic and pedestrian control	<ul style="list-style-type: none"> • Indicate agency personnel (e.g., number of staff or individual name, rank, and unit/radio assignment), report date and time. • Specify schedule and route of roving service patrols. • State protocol and personnel assignments for maintaining unobstructed emergency access routes. • Specify task instructions, including traffic and pedestrian flow restrictions and permitted movements (e.g., special allowances for local traffic, buses, etc.). • Summarize the location and time (close/reopen) of planned full/partial road closures encompassing a particular location. • Provide step-by-step directions in order for substitute personnel to quickly learn protocol. • Include explanation, supplemented with graphics, of special event parking area permits and event passes.
Post-event evaluation	<ul style="list-style-type: none"> • Describe components of post-event field personnel debriefing. <ul style="list-style-type: none"> ○ Time of heavy traffic and pedestrian flow ○ Qualitative assessment of traffic and pedestrian operations at location. ○ Recommendations to improve traffic and/or pedestrian flow at location

creases stakeholder familiarity of the duties, responsibilities, and capabilities of other stakeholders.

While a traffic management plan can cover many contingencies, it cannot cover all possibilities. Review and testing can allow participants to see how they handle various scenarios and how varying elements can affect the plan. The testing of the plan should be considered part of the overall training that is needed for traffic management team personnel to become familiar with the plan and their role in it.

Stakeholder Simulation Exercises

The simulation exercise can test important elements such as: (1) interagency communications, (2) deployment of personnel and equipment, and (3) information gathering and dissemination. While stakeholders may conduct the exercise at the venue where the

planned special event will occur, much of the plan will involve permanent TMCs or temporary command posts which are in operation before, during, and after the event. Therefore it is important that all of the responsible agencies and TMCs, which may have a role to play during the actual event, be involved with the simulation exercise.

Exercises can take on two different forms:

- A tabletop exercise
- A full-scale simulation

The purpose of both types of exercises is to: (1) test the written assumptions in the traffic management plan and (2) see what must be changed and how the plan can be improved. No matter how thorough a traffic management plan may be, it can not account for all contingencies. The plan assumes participants will follow the steps laid-out, but individuals make mistakes and equipment may

fail. Both the tabletop and full-scale simulation allow the participants to see how they react to those unexpected events.

In both a tabletop exercise and a full-scale simulation, participants receive and use the written traffic management plan and implementation plan as the basis for their actions. Table 3-35 lists elements of a typical exercise.

Table 3-35
Elements of a Stakeholder Simulation
Exercise

ELEMENT
<ul style="list-style-type: none"> • Identify the stakeholders who will participate in the exercise. • Distribute copies of the traffic management plan and implementation plan to participants. • Develop a script for the exercise, including surprise elements, which may not be addressed in the traffic management plan. • Provide a timeline for the exercise to play-out (the exercise will probably take place in an accelerated timeframe compared to a real-life event). • Identify reviewers who will watch the exercise and take notes. • Provide time to review the exercise. • Modify the plan based on what was learned during the exercise.

Equipment Testing

A wide variety of equipment may be used to manage travel during a planned special event. This includes communications equipment and equipment in the field, which supports the traffic management plan and helps the traffic management team manage the event. Equipment that may need to be tested includes:

- Center to center communications
- Center to field communications
- Changeable message signs, both fixed and portable
- Highway advisory radio
- CCTV

While testing is no guarantee that equipment will work as expected, it is useful in identifying unknown problems and potential problems before the event.

Personnel

Traffic management plan implementation on the day-of-event involves personnel duties ranging from trivial tasks to responsibilities critical to the safety and mobility of transportation system users. A traffic management team comprised of supervisors and field staff having experience in assigned duties and responsibilities represents a key to successfully managing travel for planned special events. Experienced personnel should exist at all levels in the traffic management team hierarchy: interagency command, agency command, and field operations. However, supplementing experienced personnel with temporary staff and volunteers on the day-of-event also provides advantages that (1) reduce personnel cost as public agency personnel likely require overtime wages on the day-of-event, (2) permit public agencies to adequately meet other daily staffing requirements, and (3) provide expanded control over transportation operations and greater convenience to event patrons.

In some cases, the amount of personnel required to implement traffic management plan strategies (e.g., traffic/pedestrian control, parking, surveillance) on the day-of-event, coupled with implementation plan assignments such as equipment delivery and installation, may exceed the staffing capabilities of agencies and contractors involved in managing travel for a planned special event. As a result, the recruitment and training of temporary staff and volunteers becomes paramount to the success of day-of-event operations.

Volunteer Recruitment

Prior to initiating volunteer recruiting efforts, event planning team and/or traffic management team stakeholders must determine the number of volunteers needed. This represents a function of the number of potential volunteer work assignments and number of available volunteer supervisors. An alternative approach to recruiting after traffic management plan development involves: (1) soliciting the public, through event advertisements, for volunteers early in the event operations planning phase and (2) developing a volunteer contact list for later reference as conditions warrant.

Because different special event work assignments peak varying levels of interest among volunteers, stakeholders should recruit additional volunteers for certain low-interest assignments. This avoids a potential shortfall relative to volunteers not showing up for work on the day-of-event.

Training Activities

Training for volunteers and temporary staff ensure these personnel: (1) understand the traffic management plan component governing their assignment, (2) disseminate accurate information to event patrons and supervisors, and (3) understand traffic management team operations protocol. Training involves the distribution of reference material, pre-event seminars, or both.

Table 3-36 lists general volunteer training activities. Since most volunteers do not possess relevant experience in managing transportation and parking operations, training activities should address all of the potential decision-making scenarios that volunteers may encounter in addition to day-of-event communications.

Table 3-36
General Volunteer Training Activities

ACTION
<ul style="list-style-type: none"> • Discuss traffic management team chain of command. • Summarize job training and required duties. • Schedule review. • Present examples of typical and contingency scenarios and how volunteers should react. • Provide background in customer service. • Describe field communications infrastructure. • Discuss proper radio communications protocol. • Explain types of parking area permits and event passes. • Discuss strategies for accommodating persons with disabilities (e.g., review disabled accessible routes and site facilities). • Review security guidelines. • Review guidelines for interacting with the media. • Indicate transportation information and alternatives for volunteer access to event venue site.

DAY-OF-EVENT ACTIVITIES

Day-of-event activities focus on the daily implementation of the traffic management plan in addition to traffic monitoring. The traffic management team represents a distinct stakeholder group charged with executing the traffic management plan and modifying the plan as warranted by real-time conditions on the day-of-event. Team organization includes agency representatives stationed at a central command post, at secondary command posts, at a permanent TMC, and at strategic locations in the field for traffic control and observation. The traffic management team generally functions under a formal management process, namely the Incident Command System, to ensure successful traffic management plan deployment and minimal impact to transportation system users. Traffic monitoring provides traffic and incident management support in addi-

tion to performance evaluation data. Timely deployment of contingency plans developed during the event operations planning phase depends on the accurate collection and communication of real-time traffic data between traffic management team members.

Traffic Management Team

The traffic management team includes not only many of those stakeholders that have been involved during the event operations planning phase, but all those who may be involved for the first time on the day of the event. Table 3-37 lists typical stakeholders involved in day-of-event activities.

Table 3-37

Traffic Management Team Stakeholders

STAKEHOLDER
<ul style="list-style-type: none"> • Traffic operations agency • Transit agency • Law enforcement • Public safety • Event organizer • Transportation consultants • Traffic control contractors • Emergency management agency

Stakeholder Roles and Coordination

A planned special event represents a source of non-recurring congestion where, similar to a traffic incident, stakeholders must adopt a formal management process to ensure successful traffic management plan deployment and minimal impact to transportation system users. The Incident Command System can be used to handle traffic management during planned special events. The ICS organizes and coordinates multi-agency response to an incident by establishing responsibilities and lines of authority. An Incident Commander has overall responsibility for managing the planned special event.

Command Post

The ICS will most likely be used in a multi-agency command post. The command post will probably be at or near the venue where the planned special event takes place. Depending upon the size of the event, secondary command posts may exist. These secondary command posts may take on specific areas of responsibility, such as law enforcement or traffic control.

In some instances, a permanent TMC may serve as the primary command post. The advantage of using the TMC is that many of the communications resources and other needed tools are already in place.

Advantages of a single command post include: (1) key agencies are represented in a single location and (2) communications among agencies are simplified.

An advantage of secondary command posts is that event management can be more easily switched if a problem develops at the primary command post.

Resource Planning

The plan developed for the resources needed for the event represent the collected best opinion on what is needed. Resource planning involves the following two parts: (1) determining the scope and amount of resources that will be used on the day-of-event and (2) identifying resources in advance in case the traffic management team needs more resources than planned to implement the traffic management plan.

The most important resource that stakeholders must plan for involve personnel resources. Planning considerations include:

- What type and quantity of skilled personnel are needed?
- Where should personnel be deployed?
- What responsibilities will individual personnel have?

Managing Traffic

While the traffic management plan and supporting implementation plan notes how stakeholders expect to manage traffic, the actual management of traffic on the day-of-event may differ from what the plan calls for. Traffic incidents, changing weather conditions, and other unexpected events can all cause the traffic management plan to be modestly modified or completely changed. After safety, successfully managing traffic represents the reason why stakeholders developed the traffic management plan in the first place and that goal must remain paramount.

As part of the traffic management plan, various scenarios can be addressed from best case to worst case, together with likely variations. Having different scenarios and response plans specified in the traffic management plan will help managers more quickly respond to changes. Again, not every variation can be noted, but experienced staff can modify what the traffic management plan calls for.

Evaluation Activities

Although many hours have been spent creating the traffic management plan, the plan should remain flexible with the ability to modify and enhance it with necessary changes based on real-time traffic conditions. Updates can continue through the course of the planned special event, accounting for new situations and unexpected events. Evaluation of the plan is an ongoing

activity during the event, and participants should contribute their insights as they witness the event unfolding. The traffic management team must be open to modifications of what had been agreed to during the event operations planning and implementation activities phases.

Table 3-38 indicates key traffic management plan evaluation activities on the day-of-event.

Table 3-38
Traffic Management Plan Evaluation Activities

ACTION
<ul style="list-style-type: none"> • Establish briefing schedule and location (e.g., command post). • Identify ranking representative of each stakeholder agency participating in briefings. • Conduct day-of-event briefing. <ul style="list-style-type: none"> ○ Situation status ○ Objectives and priorities ○ Current organization ○ Personnel and equipment resource assignments ○ Communications ○ Concerns and related issues ○ Recommended changes • Achieve consensus on recommended changes.

Communication

In most areas of the country, interoperable communications, in which all agencies are able to communicate on a common radio frequency, is not yet a reality. That being the case, it is necessary for a communication structure and protocol to be established. As shown in Table 3-39, the structure should include the noted primary considerations.

Whatever frequency is used, it is important that all those who must use it be able to access the channel and that coverage include all areas where operations will take place.

Table 3-39
 Communications Structure Primary
 Considerations

CONSIDERATION
<ul style="list-style-type: none"> • What radio channels or frequencies will be used. • Who will use these channels. • Will a common lexicon be used for communications.

Another important part of the protocol involves using *common language* on a multi-agency frequency. An increasing number of agencies are now using clear language protocols on their radio frequencies, and these standards should be followed if multiple agencies have to communicate with one another. Clear language simply says that commonly understood words and phrases are used instead of codes.

Interagency Communication

To minimize confusion and extraneous information being shared among agencies, the question of who will use which frequencies should be decided during the planning process. Stakeholders should understand: (1) how they can reach other traffic management team members during the event, (2) which channels they will be found on, and (3) what information should be shared.

Since many of the stakeholders comprising the traffic management team may not be accustomed to interagency coordination, they should understand the importance of sharing information with their interagency partners. Information not shared with others who are affected could lead to difficulties managing traffic and cause mistrust among participating stakeholders.

Equipment

The participating agencies may normally operate on a wide variety of systems. VHF, UHF, and 800 MHz trunked systems are among those in common use, and agencies cannot normally communicate from one system to another. Before the right equipment can be identified, it is important for the stakeholders to understand what they want the communications system to do. Is it simply a means to share information, or does real-time coordination have to take place? Who has to operate on the channel? Where will they be located? Once these questions are answered, it becomes possible to identify the appropriate equipment to use for the event.

Interacting with the Media

The media may find that the usual means they use to get traffic information are unavailable during the planned special event. Due to security concerns, airspace near the site may be off limits. This makes the media more dependent upon the agencies to provide them with updates.

Unless a proactive decision is made otherwise, most agencies would not want the media to call the command post for updates. Calls to and from the TMC may be the best way to get information to the media. Wherever the media are directed to call, it is important that the person handling those calls has the most up-to-date, accurate information available. For the media to trust this source, they must believe that this is the best place to get information. Since most media want to verify information on their own, agencies should be prepared for the media to seek out other sources. The media may also acquire information via cell phones from event patrons driving to the planned special event, and the media will want to verify the information the public provides with the transportation agencies. If trust is lost be-

tween the media and the agencies, the agencies may lose control of the flow of information.

Traveler Information Dissemination

Traveler information will have two important audiences during the event: (1) those who plan to attend and (2) those who want to avoid the delays the event may cause. In both cases, traveler information tools can be used to effectively disseminate information.

On the day-of-event, it must be clear who will update traveler information devices and how timely and accurate information will get to the officials responsible for providing the updates. These individuals must be part of the communication chain. Assigning a dedicated person to handle the updates would be ideal. Conflicting priorities could result in out-of-date information being disseminated if one person is asked to handle too many tasks.

Traffic Monitoring

Agencies responsible for managing planned special events require numerous types of information on the current conditions of the system to support delivery of effective service for the planned special event. This required information varies widely depending on: (1) the service being provided, (2) how often it needs to be collected, and (3) how accurate it needs to be.

In a traffic management system, the traffic monitoring component, or surveillance component, is the process in which data is collected in the field. This data is used to supply information about conditions in the field to other system components including personnel located in the field on the day-of-event.

The information collected through the monitoring effort is valuable for post-event activities. After the event, the information gathered and/or observed can be used as part of the program or event evaluation. The data collected provides: (1) input into estimating the benefits of the traffic management plan and operation and (2) input into planning for future planned special events.

Performance Evaluation Data

Performance measures provide the basis for identifying the location and severity of problems (such as congestion and delay), and for evaluating the effectiveness of the implemented planned special event management strategies. In essence, performance measures are used to measure how the transportation system, and therefore the traffic management plan, performs with respect to the adopted goals and objectives, both for ongoing management and operations of the special event and the evaluation of future options.

In managing travel for planned special events, a direct relationship exists between the performance measures selected and the data needed in the performance measurement process. The data and information used in decision-making must be of high quality because the remedies have to be performed immediately. They must originate from reliable, consistent sources and meet the needs of the decision makers. Moreover, the decision makers must have confidence in the information, or it will not be used.

POST-EVENT ACTIVITIES



Post-event activities range from informal debriefings between agencies comprising the traffic management team to the development

of a detailed evaluation report. Qualitative evaluation techniques include individual debriefings of traffic management team members, patron surveys, and public surveys. Quantitative evaluation techniques include performing an operational cost analysis and analyzing performance evaluation data collected during the traffic monitoring process. Evaluation results, identifying needs and successes, represent valuable input toward planning for future planned special events and creates an iterative process.

Evaluation Framework

The first steps in the evaluation of the traffic management plan implemented for the planned special event take place during the event operations planning phase. Knowing ahead of time that a post-event evaluation will occur allows participants to make provisions for the review. In particular, this means collecting data during the event, which can be used as part of the review process. At a minimum, this would include data indicating how the system performed and a log of what took place during the event.

Measures of Effectiveness

Measures of effectiveness represent quantitative measures that give some insight into how effectively a unit is performing. MOEs are measures of activity that, while not reflecting performance directly, show workload and trends. To evaluate how well the traffic management plan worked, some form of measurement is necessary. In addition to telling stakeholders how effective their plan was, the measurements provide transportation professionals the means to demonstrate to others, including the media and elected officials, how well the plan may have worked.

There are two areas of effectiveness that should be measured, *internal* and *external*. Table 3-40 indicates examples of internal measures. Table 3-41 presents a list of external measures.

Table 3-40
Internal Measures of Effectiveness

MEASURE
• Number of messages displayed on changeable message signs
• Number of messages broadcast on highway advisory radio
• Number of traffic incidents handled
• Number of messages transmitted between stakeholders
• Number of traffic signal timing changes
• Number of times a ramp(s) was closed and time/duration of closure(s)

Table 3-41
External Measures of Effectiveness

MEASURE
• Volume of traffic on major routes
• Volume of traffic on alternate routes
• Volume of traffic entering and exiting the site and parking areas
• Hours of delay
• Number of event patrons and participants utilizing transit to and from the event
• Travel times
• Modal split
• Average vehicle occupancy

Application to Future Events

Whether the event is a one-time only happening or an annual occurrence, what has been learned through the evaluation can contribute toward proactively improving travel management for all planned special events occurring in a region.

To be beneficial for future planned special events, the results of the evaluation should be documented and made accessible. In the case of a one-time only event, the evaluation may show both general and specific insights, which can be used for other future planned

special events. These could include areas such as traveler information, interagency communications, and the planning process itself.

For recurring events, a file providing the cumulative benefit of lessons learned will help sharpen the traffic management plan developed for each new occurrence. It is also important to remember that with recurring events, slight changes in circumstances will require modifications to the plan.

Participant Evaluation

Participant evaluation includes: (1) stakeholder debriefing, (2) patron survey, and (3) public survey.

Stakeholder Debriefing

At the conclusion of the planned special event, a debriefing session should be held. The stakeholder debriefing is an opportunity to bring together those involved and impacted by the planned special event. In it, these individuals, and the groups they represent, can compare what the plan called for and what actually took place. They can also examine areas the plan may not have addressed but turned out to be issues in hindsight. All of those who were involved in creating the traffic management plan, as well as key people who played a role during the event itself, should be present for this session. This includes stakeholders forming the event planning team and traffic management team. Table 3-42 lists elements of a stakeholder debriefing.

Patron Survey

Although the goal is to keep traffic moving on all of the transportation facilities, the patrons are the ultimate customers of everyone involved in the traffic management of the

planned special event. It is largely for their benefit the traffic management plan was created in the first place, and they are the ones likely to suffer the greatest consequences if the plan does not work. Therefore, the viewpoint of event patrons is needed if a credible evaluation of the plan is to be done.

Table 3-42
Elements of a Stakeholder Debriefing

ELEMENT
<ul style="list-style-type: none"> • Introductions of individuals and the roles they played (if not obvious) • Explanation that the debriefing is not designed to find blame for anything which may have gone wrong, but to identify areas of improvement for future planned special events • Distribution of a chronology of the special event, preferably one which melds individual agencies' own chronologies • Review of the timeline of events • Discussion of other areas of concern • Next steps to incorporate lessons learned

Sample questions for possible inclusion in a patron survey include:

- Were you aware of any special travel information before the event?
- Did you find information provided en-route to the event (e.g., via signs, radio) helpful?
- Did you experience any unexpected problems approaching the venue?
- Do you have any suggestions or other comments you wish to offer?

Public Survey

The public survey takes in a wider audience than the patrons. This includes those who may have been impacted by the planned special event even though they did not attend the event. Since this is a larger and more diverse group of stakeholders, it may be more difficult to identify and survey them.

Sample questions for possible inclusion in public survey include:

- Were you aware of the event before it took place?
- If you were aware of the event beforehand, would you have altered your plans based on that information?
- Did you change your plans or schedule as a result of the event?
- How would you evaluate the effectiveness of traffic management efforts for this event (poor, good, excellent)?
- Do you have any additional comments or suggestions based on your experience?

Post-Event Debriefing

A post-event debriefing should be held to review what took place. The purpose of the debriefing is to: (1) examine what took place, (2) compare it to what was expected to happen, (3) identify what worked well, and (4) determine areas of improvement for future planned special events.

It is important to remember that the post-event debriefing is not designed to be a time to blame individuals or agencies for what took place during the event.

Table 3-43 lists the broad topic areas that should be covered in the post-event debriefing.

Table 3-43
Post-Event Debriefing Meeting
Agenda Topics

TOPIC AREA
<ul style="list-style-type: none"> • Purpose of meeting • The planning process • Interagency communications • Traffic management in and around the venue • Traffic management outside of the event site • Traveler information, including media • Lessons learned

The purpose of the post-event debriefing is not to just identify what could have been done better but to note what was successful. The successes and lessons learned must be chronicled so that those stakeholders who are responsible for planning the next planned special event will be able to tap the wisdom of those who have done this before.

Post-Event Report

Table 3-44 presents an outline of a typical post-event report.

Table 3-44
Outline of Post-Event Report

REPORT ORGANIZATION
<ul style="list-style-type: none"> • Outline report topics. • Document products of the event operations planning phase. • Identify key successes. • Present lessons learned. • Identify improvements for future events. • Configure to serve as a working document for future special event planning. • Review chronologically what took place. • Summarize both positive and negative aspects. • Include all stakeholder viewpoints.
OPERATIONAL COST ANALYSIS
<ul style="list-style-type: none"> • Examine operational costs. • Include staffing, overtime, and equipment for each involved agency. • Identify potential cost savings. <ul style="list-style-type: none"> ○ Reallocation of personnel ○ Division of responsibilities ○ Use of technology • Include total staffing, overtime, and equipment for all agencies.
QUALITATIVE EVALUATION
<ul style="list-style-type: none"> • Include survey of stakeholders. • Include survey of event patrons. • Include survey of public.
QUANTITATIVE EVALUATION
<ul style="list-style-type: none"> • Provide numerical picture of the event. <ul style="list-style-type: none"> ○ Costs ○ Hours saved ○ Traffic incidents handled ○ Passengers carried on various modes. • Present cost/benefit analysis.

Since the process of handling the planned special event follows a timeline, the easiest way to organize the report may involve reviewing what took place chronologically. An alternative method of organizing the report concerns dividing it by subject areas such as traffic management, traveler information, command center operation, and communications.

The report should summarize both positive and negative aspects. Remember, this is not designed to be a public relations piece to promote the handling of the planned special event but a working document to assist future special event planning.

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CHAPTER FOUR REGIONAL AND LOCAL COORDINATION



Figure 4-1
Closed-Circuit Television Camera on a Stadium Access Road

PURPOSE

This chapter covers the first of five phases of managing travel for planned special events. Program planning for planned special events involves activities unrelated to a specific event. This level of advance planning involves the participation and coordination of stakeholders having an oversight role in addition to agencies directly responsible for event operations planning. Products of program planning include establishing new institutional frameworks, policies, and legislation to monitor, regulate, and evaluate future planned special events. Stakeholders utilize program planning initiatives to more

efficiently and effectively complete event operations planning, implementation activities, day-of-event activities, and post-event activities for individual, future planned special events. In turn, post-event activities (e.g., participant evaluation, stakeholder debriefing meeting, evaluation report) performed for specific special events provide valuable input for on-going program planning activities in a region or jurisdiction.

This chapter presents key elements of program planning on a *regional level* and *local level* that facilitate improved planning and management of travel for future planned special events affecting multiple jurisdic-

tions or a single municipality, respectively. It also describes strategic *infrastructure support* considerations for improved traffic management and dissemination of traveler information. The occurrence of major or recurring planned special events often serve as a platform for stakeholders to assess new services and infrastructure proposed for a single or series of special events in the context of supporting: (1) all special planned special events in a region and (2) day-to-day transportation system operations.

INTRODUCTION

This chapter presents program planning activities conducted for future planned special events. These activities include the development, by oversight team stakeholders, of policies, programs, and regulations that collectively comprise a special event program for managing all planned special events in a region. Program planning for regional planned special events requires an institutional framework for generating and managing successful programs and initiatives. Some key topics and initiatives addressed in this section include:

- Role of oversight stakeholders, including (1) how their involvement is coordinated, (2) what are the programs and initiatives that facilitate the planning and operation of planned special events, and (3) how special events planning is integrated with other ongoing transportation programs.
- Support necessary from a policy perspective. On a policy level, interagency agreements permit those involved to work together. At times, legislation may be needed to allow agencies to go beyond their current activities into areas not currently permitted legally.
- Regional planned special events programs. In many instances, the impact of

planned special events will extend beyond the jurisdiction of a single agency. In this section, the key elements of regional planned special events programs will be identified, the scope and benefits of such programs will be noted, and stakeholder organization will be explained. Also covered in this section is how such programs are developed, and just as important, sustained. Services and initiatives that go into regional planned special events management will be explained and the institutional issues, likely to be encountered, will be noted.

- Government agency permitting and regulation framework. The permitting process can identify many of the basic elements of the special event such as its timing, location and expected number of event patrons. Through a carefully constructed permitting process, transportation and public safety agencies can achieve a better sense of what resources these stakeholders need to handle the event. This section will provide an overview of the permit process, what the process includes, the components of a detailed application, and the associated requirements including recovery of public stakeholder expenses.
- Infrastructure support. Technology can be used for a variety of purposes, including communication among stakeholders and to the public in addition to transportation system management and monitoring during events. Paying for these activities is covered in the subsection on funding sources.

REGIONAL LEVEL

Institutional Framework

Stakeholder Roles and Coordination

Program planning for regional planned special events concerns proactively improving travel management for all planned special events in a region. This necessitates the involvement and coordination of stakeholders representing multiple jurisdictions. At the program planning level, the stakeholders include:

- Those agencies directly involved in planning and day-of-event travel management for special events. These include law enforcement agencies, transportation departments, transit providers, and regional organizations.
- Others who typically are not involved in transportation management, such as the event organizers and elected officials serving an oversight role.
- Typically, mid-to-upper level agency administrators that collectively form the planned special events oversight team.

The FHWA publication, *Regional Transportation Operations Collaboration and Coordination*, addresses how regional coordination can take place during incidents and emergencies.⁽¹⁾ While unplanned events are not specifically targeted in the publication, the same basic elements can be applied to planned special events. Figure 4-2 indicates five major elements of a framework for regional collaboration and coordination. The balance of this section notes how each of the elements fits into regional coordination for planned special events. The five-step process described below is not instituted when an incident or emergency takes place, but is a way of doing business that facilitates regional coordination when an event occurs.

Step One: Identify the Stakeholders. Which agencies and organizations will have a role in managing events? Which agencies have an oversight role? Depending on the location, there may be multiple states or several

metropolitan planning organizations (MPOs) that have an oversight role.

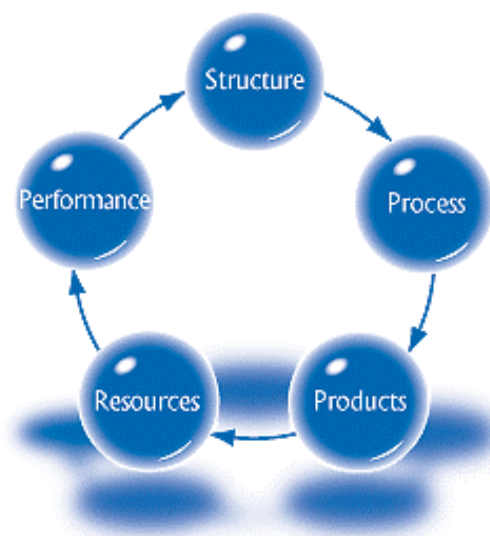


Figure 4-2
Major Elements of a Framework for Regional Collaboration and Coordination⁽¹⁾

As these questions are answered, a widening circle of stakeholders will be identified. As they are listed, their roles and responsibilities will be noted. Since not all stakeholders will have the same level of participation, their involvement in the planning process can also be assessed.

Step Two: Identify a Lead Agency. While a collaborative process is ideal in dealing with a planned special event, there is still a need to identify a lead agency that will have overall responsibility for the group’s work. In many instances, no one agency will have a clear leadership role for program planning. A possible way to pick a leader without offending other lead agencies is to use co-chairs representing different disciplines or geographic areas. Leadership can also rotate to assure that all key players have an opportunity for a leadership role.

While the lead agency oversees the entire process, it can delegate elements of the plan

to others with expertise in particular areas. For example, public safety issues might be assigned to a law enforcement agency or a sub-committee of public safety agencies. These stakeholders would help make up the *structure* in which regional coordination takes place.

Step Three: Maintain Communication. Throughout the planning process, communication among stakeholders is critical. Meetings of the stakeholders represent a venue where stakeholders can share what they see as their role in the planning process. As they meet, roles and responsibilities are adjusted as agencies understand what other agencies will be doing and how they can assist each other.

Step Four: Form Subcommittees. Depending upon the complexity of the event, subcommittees may be formed to focus on specific planning elements. For example, security may only directly involve law enforcement agencies at the local, state and federal levels. These agencies can meet separately to plan their segment of the overall plan. Representatives of these subcommittees can share their progress, along with their needs, with other stakeholders at higher level planning meetings.

Step Five: Continue Communication. Throughout the planning process, the lead agency takes a *big picture* view and serves as a coordinator. Its responsibility is to see that communication and coordination are taking place among the stakeholders and, if necessary, to facilitate that coordination where it is not taking place.

Programs and Initiatives

While planned special events may be temporary, and the planning for those events may bring together a group of stakeholders only

for that event, ongoing programs and initiatives can be used to address general special event needs on a continual basis. This portion can be described as the *processes* of coordination. Processes are what the stakeholders have agreed to that will provide the basis for how they will work together. An institutional framework can be created either before an event takes place or based on the planning for a specific special event. This framework can be used on a continuing basis to allow easier coordination among agencies for future events and eliminates the need to re-establish working relationships, which have already been created.

A state transportation agency or an MPO can develop a program that identifies what is needed for the effective management of special events. These overarching needs may include funding mechanisms, means of early identification of special events needing regional planning, and a template to bring stakeholders together to begin the planning process.

Funding is an important consideration since it is needed to pay for the time of staff assigned to planning and coordination efforts. Without an identified source of funding, the participation of agencies is subject to the availability of financing from the home agencies of those asked to take a role. At times of budgetary restrictions, agencies may not choose to make staff members available for planning and coordination, or they may limit the time or number of staff members who are needed to formulate a plan. This could be especially true for agencies that are outside of the jurisdiction where the event is being held. However, funding could be included within the budget of an MPO or a state DOT.

While all stakeholders may be aware of recurring special events, such as sporting

events and annual fairs, or major events such as the Olympic Games or the Super Bowl, less prominent events may not gain notice until just before the event. Having a program in place to identify special events requiring planning well in advance is beneficial. This initiative could take several forms. One example is regularly scheduled meetings where upcoming events are noted and discussed among regional agencies. Identification of potential problems would alert all involved to the event and allow agencies to decide if multi-agency planning needs to take place. Such meetings could be held specifically for this purpose, or they could be incorporated as part of gatherings held for other purposes.

The process of regional coordination and collaboration leads to the *products* of coordination. These products include a regional concept of operations, baseline performance data, current performance information, and operating plans and procedures that inform regional entities (public and private sector) about how the regional transportation system must operate over time (including planned improvements).

Integration with Other Transportation Programs

Planned special events are just one example of transportation activities requiring multi-agency coordination. Special events planning could be held in conjunction with other multi-agency efforts such as construction coordination, incident management planning, and wireless communications coordination. These activities bring together most, if not all, of the key regional transportation and public safety agencies and, in turn, allow them to discuss special events while they are already together. By expanding the agenda of such meetings to include initial special events planning, agencies are given

one more reason to attend. Also, meeting fatigue is limited by not having stakeholders attend separate meetings focused only on special events.

For some smaller special events, these regularly scheduled meetings may be sufficient to alert affected stakeholders and to do a minimal amount of planning. For larger special events, requiring more detailed preparation and coordination, separate meetings should be considered. This will allow specialists to participate where necessary and will allow the original meeting to not lose its focus on a wider agenda. The regularly scheduled meetings can also be a place where updates of the more detailed plan are presented.

Policy Support

Interagency Agreements

In most instances, transportation and law enforcement agencies have no prohibitions from coordinating efforts with other agencies, especially for events expected to have an impact on that agency. However, there are instances where interagency agreements are helpful, or even necessary, for multi-agency cooperation.

While interagency agreements will vary based on state law and the culture of the agencies, there are some common issues they can address.

One issue would be *areas of responsibility*. State police, state DOT and toll agencies could each be given broad areas of responsibility through an interagency agreement. By spelling out these responsibilities ahead of time, *turf issues* can be minimized and the same ground does not have to be covered each time the agencies gather to plan a special event.

Funding issues can also be addressed in interagency agreements. If it is known ahead of time who will be paying for various aspects of the effort, confusion will be reduced and participation encouraged. In some instances, the agreements could specify that a non-public agency, such as the event organizer, is responsible for paying for certain parts of the planning and coordination effort.

Legislation

Legislation provides the legal authority for a government agency to take certain actions. In many instances, activities involved in special events planning have already been addressed by legislation. Examples include law enforcement responsibilities for the state patrol on an interstate highway leading to the event venue or the state department of transportation being responsible for operation of a transportation management center (TMC) in the area of the event. However, there may be special circumstances not addressed in current legislation.

Examples where special legislation may be needed could include permitting agencies to operate outside their current jurisdiction or taking on activities they have not been given specific authority to undertake.

Some important considerations in establishing legislation during the program planning phase include:

- Since creating and passing legislation is normally a lengthy process, it is important that these needs are identified early so the process can be completed before the new law is needed.
- In many instances, a request for legislation has to go through many steps within an agency before it is even presented to lawmakers. At a minimum, agency

counsel and executive management needs to be involved. Since these individuals typically would not be involved in special events planning where these needs are first identified, it is also important that procedures be in place to begin the legislative process.

- Most agencies already have procedures in place to bring legislative needs to the attention of lawmakers, but it is important that those who first identify these needs know what those procedures are and how to get the process started.

Regional Planned Special Events Program

Key Elements

A regional planned special events program is an ongoing process designed to address a region's needs for managing special events. It is not a program put in place to address a specific special event, although a specific event may trigger the formation of such a program.

The program involves those agencies that have a role in managing planned special events as well as those agencies that may be in an oversight or funding role.

The program will put in place the framework for handling regional planned special events including:

- A template for groups created to deal with specific special events.
- Identification of funding to support such planning.
- Identification of infrastructure improvement needs in the region to better manage special events.

All of these elements used to implement a regional special events program can be con-

sidered the *resources*. These resources will vary depending on what is available in the region and to the participants.

Scope and Benefits

The scope of such a program should focus on planned special events of regional significance. If an event can be wholly managed within and by a single agency or jurisdiction (e.g., through a planned special event permit program), then there is no need for the regional plan to come into effect.

However, those events that reach beyond a single agency or jurisdiction would be addressed by this program. Regional events may vary in size. For example, a parade through two towns would have limited regional impact and might require only minimal coordination, but a mega-event, such as the Olympics, would involve multiple regions and a large number of agencies.

Key benefits of a regional planned special event program include:

- The primary benefit to the creation and maintenance of such a program is that it establishes a mechanism for agencies to work together before they are *forced* to work together as the result of an impending event.
- By early identification of funding opportunities, agencies can address monetary needs prior to the event. Therefore, when an event is proposed, stakeholders can focus on planning and not be concerned with funding the planning.
- Another benefit is that by early identification of infrastructure improvements, there is a higher likelihood that the improvements can be put in place before they are needed. Noting what improvements are needed just before the event may mean they will not be available

given the lead time needed to make the improvements.

- Legislative and policy needs will also be identified through this program. As with infrastructure improvements, this will allow these needs to be addressed prior to their being required.
- An intangible benefit accruing from a regional planned special events program is the development of relationships that will extend to other operational areas.
- Better communication and cooperation is likely and will help in areas such as incident management and construction coordination.

It is important that performance measures be planned: (1) to note the *performance* benefits of the regional planned special events program and (2) to demonstrate the differences it has made to mobility and coordination within the region. Since the goals and objectives of the program are part of a collaborative process, what is measured should also be agreed to by the participants.

Stakeholder Organization

The stakeholders in a regional program such as this will vary from region to region. Table 4-1 lists organizations that should be considered part of the program. Leadership of the program will vary by region, but the agencies most likely to take the lead include state DOTs, state law enforcement agencies, and MPOs.

Program Development and Sustainment

Perhaps the hardest step in the development of the program is the first step, *creation of the program*. A champion of the idea, who is willing to go through the difficulties in establishing the program, is very helpful. This person can reach out to those people in leadership positions who will support the

program and assign people within their organization to work on its creation. The champion will also shepherd the program through the red tape, agency mazes, and obstacles any significant new idea is sure to face.

Table 4-1
Regional Program Stakeholder
Organizations

STAKEHOLDER ORGANIZATIONS
<ul style="list-style-type: none"> • State Department of Transportation • Metropolitan Planning Organization • State police/patrol • Toll agencies • Mass transit agencies • Municipal governments and police departments • County governments and police departments • Owners of large venues (e.g., arenas, stadiums, universities)

Ideally, agencies should assign people within their organization who support the concept and who can speak on behalf of their agency when decisions need to be made. These people should have a strong commitment to the program and be willing to attend meetings and take follow-up actions identified at these meetings.

Potential funding agencies should be a part of the program from the start. They can provide guidance on where funding is available and the steps that need to be taken to obtain it. By being involved at the beginning, the representative from the funding agency can guide the group in what they must do and help avoid situations where early decisions have to be adjusted to meet needs that are later identified.

The sustainment of the program will be due, in part, to the support of those who participate. Open lines of communication should keep all stakeholders and interested observ-

ers informed of what is being done as well as problems that may be encountered. What is needed is not someone who only sees the good, but someone who can make a realistic assessment of where the challenges lie and how to overcome them.

While what is described in this section involves varying levels of involvement, a region just starting to initiate program planning for regional planned special events should not be intimidated by what may be required before they take their first steps. As a starting point, even before high-level support is obtained or funding is identified, first steps can be taken on an informal basis among operations level staff to share information and to use resources which are already available, such as highway advisory radio (HAR), changeable message signs (CMSs), and interagency communications channels. Often it is these first, informal steps that demonstrate the value of regional coordination and lead to more formal support.

Services and Initiatives

The customers for this group are the event planning team and traffic management team charged with making planned special events run smoothly from a transportation perspective. The services they provide should be designed to make special event operations run well. While the regional planned special events program stakeholder group will identify early action steps and other needs, it is important that they seek the input of operations personnel as they define the services they will provide.

The very creation of the group provides an important service: (1) a forum for information to be shared and (2) needs to be identified. Other services the program will provide are those noted earlier:

- Identification of funding sources.
- Funding of the program itself.
- Identification of needed infrastructure improvements.

By handling these issues, the program will allow operations staff to focus on specific plans and leave some of these other concerns to the group.

Institutional Issues

A regional planned special events program will face some of the same institutional issues faced by other multi-agency programs. To assure the success of the program, the following two institutional issues should be handled at the start of the process:

- Control and leadership issues.
- Need for buy-in from participating agencies.

The program needs to be flexible enough to deal with changing conditions. The structure established may not always be the ideal one for every event. Agencies should be comfortable dealing with the ambiguity that comes with new situations and be able to adjust to the situation presented.

The flexibility also affects budgeting. While expenditures need to be allocated, a reallocation will likely be needed at times to address new concerns and needs.

While a core group will participate in running the program, it may be necessary from time to time to bring in new organizations. The program should anticipate expansion so that it does not become an issue and can easily be integrated. While institutional issues among participating agencies may be a problem at the start, there exists danger of the program itself becoming an institution and presenting its own set of issues.

Many institutional issues can best be handled by those who participate in the regional planned special events program. The relationships established by committee members can be extremely helpful in overcoming encountered problems. As personal relationships develop among the members, institutional barriers become less significant and easier to deal with.

A regional committee on planned special events should not see their task as a one-time effort. Even without a specific event on the horizon, the group should work to maintain the relationships developed and adjust the planning process so that it remains fresh. This could be encouraged through regular meetings in which the group looks at upcoming special events that might require regional coordination or by expanding the role of the group so they can address other transportation management issues in-between special events. This could include areas such as roadway construction coordination and incident management planning. Some regions have even used groups such as this to provide better regional coordination for non-events such as road weather management or recreational traffic management (e.g., reach the beach, etc.).

While many of the issues addressed in this section look at planning for special events on both a short-term and medium-term basis, agencies also should consider long-term planning (10-20 years) on how they wish to handle special events. This long-term planning can address areas such as: (1) major infrastructure improvements, (2) creation of new organizations that may be needed, or (3) long-term financial and legislative needs to address these improvements. While operations level people can help identify these needs, the development of long-term plans also will require the involvement of planners and executive staff, along with legislators

and their staffs. An MPO can also be expected to play a major role in meeting these long-term needs since they will approve Federal funding and will be able to view these needs in the context of all transportation needs for the region.

Relationship to FHWA Traffic Incident Management Self-Assessment Guide

The FHWA maintains a Traffic Incident Management (TIM) Self-Assessment Guide intended for use by state and regional TIM program managers to assess their achievement of a successful multi-agency program to manage traffic incidents effectively and safely.⁽²⁾ Managers may also utilize the tool to evaluate gaps and needs in existing multi-agency regional and statewide efforts to mitigate congestion and safety impacts caused by traffic incidents. The TIM Self-Assessment tool consists of a series of questions designed to allow those with traffic incident management responsibilities to rate their performance, by assigning a score ranging from 0 (no progress) to 4 (outstanding efforts), in specific organizational and procedural categories.

Planned special events often represent a major element of a traffic incident management or freeway management and operations program. Such programs may spawn a committee on planned special events for the purpose of managing all planned special events in the program's region. The TIM Self-Assessment tool contains a TIM administrative team assessment question on planned special events. Question 4.1.2.5 states: Does the assessed TIM program conduct planning for "special events" including sporting events/concerts/conventions, etc.? This tool also includes several assessment questions

applicable to measuring a program's progress regarding the advance planning and management of travel for planned special events.

Table 4-2 lists pertinent assessment questions categorized by the five defined phases of managing travel for planned special events. This technical reference provides guidance on the topics identified in the assessment questions from the perspective of planned special event planning, operations, and evaluation.

LOCAL LEVEL

Overview of Planned Special Event Permitting

The development of a formal planned special event permit program marks a key program planning initiative to facilitate stakeholder coordination, compliance with community needs and requirements, and efficient event operations planning. Backed by guidelines and regulations specified in municipal ordinances, the program outlines a defined planning framework and schedule for event organizers and participating review agencies to follow. It represents an *agreement* between participating public agencies (e.g., transportation, law enforcement, public safety, etc.) to ensure, through planning activities or review, that all planned special events meet a set of mutually agreed upon requirements for day-of-event travel management. A municipal permit represents approval, or agreement between a jurisdiction and event organizer, to operate a planned special event, and it includes provisions outside of travel management. Larimer County, WY defines the purpose of a planned special event permit as follows:

Table 4-2
Traffic Incident Management Program Assessment Questions Relative to
Managing Planned Special Events

PHASE	ASSESSMENT QUESTION
Program Planning	<p>Does your program:</p> <ul style="list-style-type: none"> • Have formal interagency agreements on operational and administrative procedures and policies? • Have multi-agency, multi-year strategic plans detailing specific programmatic activities to be accomplished with appropriate budget and personnel needs identified? • Have field-level input into the strategic plans ensuring that the plans will be workable by those responsible for their implementation? • Have formalized multi-agency teams to meet and discuss administrative policy issues? • Hold regular meetings of the administrative team? • Have multi-agency agreements on what measures will be tracked and used to measure program performance? • Have established criteria for what is a “major event” – event levels or codes?
Event Operations Planning	<p>Does your program:</p> <ul style="list-style-type: none"> • Have agreed upon methods to collect and analyze/track performance measures? • Have established targets for performance? • Have a pre-identified (approved) contact list of resources? • Have response equipment pre-staged for timely response? • Utilize traffic control procedures in compliance with the MUTCD? • Have mutually understood equipment staging procedures? • Have quick clearance policies? • Have a pre-qualified list of available and contracted towing and recovery operators? • Use motorist assistance patrols? • Have specific policies and procedures for traffic management during the event?
Implementation Activities	<p>Does your program:</p> <ul style="list-style-type: none"> • Conduct training through simulation or “in-field” exercises? • Train all responders in traffic control procedures?
Day-of-Event Activities	<p>Does your program:</p> <ul style="list-style-type: none"> • Utilize traffic control procedures for the end of the traffic queue? • Utilize the Incident Command System? • Have a two-way interagency voice communications system allowing for direct communications between responders? • Use Traffic Management Center(s)? • Have the ability to merge/integrate and interpret information from multiple sources? • Have a real-time motorist information system providing event-specific information?
Post-Event Activities	<p>Does your program:</p> <ul style="list-style-type: none"> • Conduct post-incident debriefings? • Conduct periodic review of whether or not progress is being made to achieve performance targets?

The purpose of the special event permit is to insure that any changes, restrictions, or adaptations, resulting from such an event are managed in a safe, prudent, and legal manner in order to protect the health, safety,

welfare, and convenience of the traveling public and citizens of Larimer County.

Special event permits apply to a single jurisdiction, and numerous cities and counties, encompassing metropolitan, urban, and/or

rural areas, across the Nation maintain a special event permit program. In contrast, a state DOT permit targets the satisfactory maintenance and protection of traffic on state highways necessitating partial or full closure due to a proposed street use event. In most cases, state DOTs encourage event organizers to use county roads or local streets whenever possible.

Some important considerations and applications of planned special event permitting include:

- Permitting proves particularly effective for less frequent continuous events, street use events, and rural events occurring at a temporary venue not having a known spectator capacity. These events place an emphasis on advance planning and public outreach to mitigate traffic operations deficiencies and community impacts.
- Jurisdictions may not require a permit for special events held at permanent venues, such as stadiums, arenas, and amphitheaters.
- Permitting allows jurisdictions the opportunity to engage the event organizer at the beginning of the event operations phase.
- Public stakeholders can size-up the event operations characteristics of a proposed event in order to schedule adequate personnel and equipment resources to accommodate the event. Resources may include traffic control, security, and maintenance.
- From the event organizer's perspective, a special event permit application and associated regulations outlines a general approach toward successfully managing travel for the event, facilitates coordination with appropriate stakeholders, and gauges resource requirements on the day-of-event.

The balance of this section on permitting will describe special event application components, review processes, guidelines, and regulations specific to managing travel for a planned special event. The section will include numerous references to special event permitting in city and county jurisdictions.

Permit Process

Initiation of the permit process for a specific planned special event begins with the submission of a completed special event permit application by the event organizer. The permit application represents a formal proposal by the organizer to stage a planned special event. In some cases, particularly those where the event organizer requests assistance from the jurisdiction in locating a suitable venue location or street use event route, the event organizer and pertinent public stakeholders may interact prior to application submission to review the proposed event and permit process.

Table 4-3 lists public stakeholders that may administer special event permit applications and issue permits. In small and medium-sized locales, law enforcement, transportation department, or city/town manager's office commonly processes a special event application for review internally and by other agencies in the jurisdiction. Some metropolitan jurisdictions have an office of special events that serves in a similar capacity. A local district partnership may assume a lead role in the permit process for events proposed in commercial areas. Jurisdictions issue an event permit based either on:

- A single official, such as a police chief, fire chief, director of public works, or elected official, rendering a final decision based on reviewer(s) input.
- A multi-agency application approval where each agency signs off on the

permit when the event organizer meets specific agency prerequisites.

Table 4-3
Stakeholders Governing Permit Applications

APPLICATION ADMINISTRATION
<ul style="list-style-type: none"> • Local law enforcement • Local transportation department • Fire department • City/town manager’s office • City/town clerk • Community development department • Office of special events • Local district partnership • Public works department • Parks and recreation department • Bureau of licenses • Office of finance • Risk management office
PERMIT APPROVAL
<ul style="list-style-type: none"> • Police chief • Fire chief • Transportation department director • Director of public works • Multi-agency approval (e.g., public works, law enforcement, and city manager). • City manager • Community development director • Street and sidewalk use coordinator of the bureau of licenses • Local district partnership • City/town council • County board of commissioners • Local planning commission

Figure 4-3 presents a flowchart summarizing key event organizer and public agency actions throughout the special event permit process, from submitting a permit application to conducting the proposed event. Agencies administering a permit application may assign a staff person, representing the jurisdiction’s event coordinator, who will assist the event organizer throughout the permit process. Table 4-4 indicates permit application submission deadlines for several cities and counties. Application deadlines significantly influence the scope of activities performed during the permit process. To

effect a comprehensive permit application review, including stakeholder meetings and public outreach, jurisdictions should mandate permit application deadlines at least 60 days prior to a large-scale planned special event. A shorter deadline is warranted when jurisdictions, for example Wichita, KS (30 day deadline), require event organizers to arrange all details with individual involved agencies prior to submitting a permit application for approval.

The special event permit process serves to scope, schedule, and direct event operations planning activities for proposed events. This reduces unnecessary delay in facilitating stakeholder coordination, developing planning deliverables (e.g., traffic management plan, etc.), reviewing mitigation strategies, and mobilizing personnel and equipment resources required to stage a particular planned special event. Practitioners may expand and contract the process in order to best fit: (1) the area type and involved stakeholders, (2) the special guidelines and regulations unique to a particular jurisdiction, (3) the operations characteristics of a particular event, and (4) the purpose of a particular event, such as community events versus commercial, for-profit events involving event organizers from the private sector. Chapter 2 of this handbook, under a section on “Impact Level,” summarizes example decision criteria and thresholds used to determine the need to initiate a special event permit process in addition to event permit requirements.

As indicated in Figure 4-3, jurisdictions should conduct a preliminary review of the proposed special event date and time in addition to, if a street use event, the proposed parade or race route. Table 4-5 shows select jurisdiction regulations prohibiting the issuance of a permit for a special event occurring at a certain time and/or location. Aside

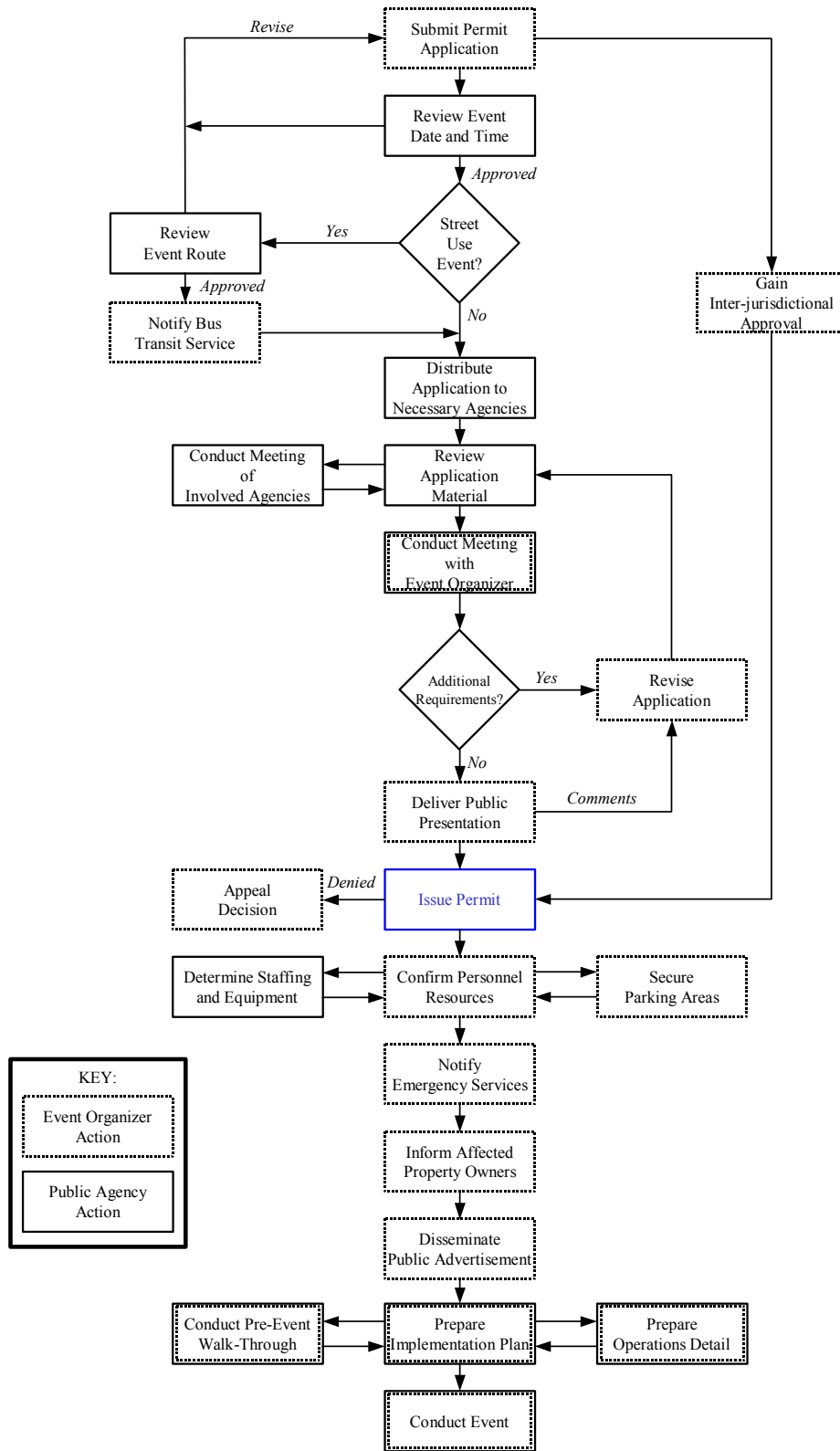


Figure 4-3
Planned Special Event Permit Process

Table 4-4
Planned Special Event Permit Application
Submission Deadline

LOCATION	SUBMISSION DEADLINE PRIOR TO EVENT
Minneapolis, MN	5 days for parade; 60 days for race
Las Vegas, NV	14 days
Stamford, CT	14 days
Fort Collins, CO	20 days minimum; 1 year maximum
Jackson, CA	20 days
Clarksville, TN	30 days
Coos Bay, OR	30 days
Hot Springs, AR	30 days
Lancaster, PA	30 days
West Des Moines, IA	30 days
Wichita, KS	30 days
City and County of Honolulu, HI	40 days minimum; 9 months maximum
Bowling Green, KY	45 days
Reno, NV	45 days minimum; 1 year maximum
Larimer County, WY	40 days; 50 days for road closure
Louisville, KY	60 days
City and County of Denver, CO	60 days
Kane County, IL	60 days
Menlo Park, CA	60 days
Miami Beach, FL	60 days
Milwaukee, WI	60 days
Ypsilanti, MI	60 days
Montgomery County, MD	2 months
Virginia Beach, VA	60-90 days
Redmond, WA	90 days
Evanston, IL	90 days
Aurora, IL	120 days

from regulations designed to avoid conflicts with commuter traffic, the possibility of staging multiple events concurrently may cause significant travel impacts and logistics problems. Law enforcement, traffic engineering, and fire department agencies may conduct a preliminary review of a proposed event route and grant approval contingent on required traffic control measures. This step

should occur prior to distributing a street use event application to all necessary agencies with preliminary approval rendered at least 30 days prior to the event. To expedite this step, San Luis Obispo, CA, for example, maintains two standard parade routes.

The special event permit application review phase involves all agencies within a jurisdiction having authority on an entity impacted by the proposed event, and certain agencies may require event organizers to meet prerequisites and/or obtain supplemental permits. Transportation approvals include street occupancy permits, parking variances, and requests for traffic control services.

Some key stakeholder considerations during the permit application review phase include:

- Involved agencies may conduct a meeting to coordinate their review and event planning considerations.
- For large-scale events, jurisdictions and associated review agencies may meet with the event organizer to discuss additional requirements and contingencies.
- Agencies should complete review of a special event permit application within about two weeks of receipt to allow the event organizer sufficient time to revise the application (e.g., site plan, parking plan, traffic control plan, etc.).
- To ensure full mitigation of potential local traffic and community impacts, jurisdictions, such as Miami Beach, FL and San Diego, CA (see Appendix A) for example, may require event organizers to present the proposed special event management plan to neighborhood and business associations and the general public for review and recommendation.
- The event organizer should deliver the public presentation early in the permit process, at least 30 days prior to the

Table 4-5
Planned Special Event Permit Restrictions

LOCATION	EVENT CATEGORY	RESTRICTION
City and County of Honolulu, HI	Street use event	<ul style="list-style-type: none"> • No parade or activity permitted between the hours of 5:30 a.m. to 8:30 a.m. and 3:30 p.m. and 6:00 p.m., Monday through Friday, except holidays. • In the Central Business District, a parade or activity permitted only on weekends and holidays or after 6:00 p.m. on weekdays. • No parade or activity permitted to use or travel the entire distance on Hotel Street, from Richards Street to North King Street. • Only one parade or activity permitted on any given day on any street.
Louisville, KY	All events	<ul style="list-style-type: none"> • Permit holders shall open the event venue to patrons at least one hour prior to the event.
Miami Beach, FL	All events	<ul style="list-style-type: none"> • No special event permitted if it interferes with a previously scheduled activity or repair work scheduled for a site. • No event permitted if it interferes with any other scheduled event. The City Manager may take into account simultaneously occurring events in the region or other factors that would impact the city’s capability to host an event before approving an event. • No permit issued for more than four consecutive days or five non-consecutive days during the course of a calendar year.
Minneapolis, MN	Street use event	<ul style="list-style-type: none"> • No permit granted for a parade/race to be conducted within the downtown area between the hours of 7:00 a.m. and 9:00 a.m. or 4:00 p.m. and 6:00 p.m. on any day which is not Saturday, Sunday, or a legal holiday. • No permit granted for bicycle racing, foot racing, race walking, wheelchair racing, rollerblading, marathons, and jogging events unless the activity is to take place between the hours of 6:00 a.m. and 3:00 p.m. on Saturday, Sunday, or legal holiday.

event, so public comments can be incorporated into application revisions.

Jurisdictions typically issue a special event permit approximately 7 to 15 days prior to the event. The lead time allows the event organizer and other stakeholders to carry out necessary tasks under the implementation activities phase. These tasks include determining resource requirements and preparing an operations plan. Certain jurisdictions may handle, by regulation, day-of-event traffic control, while other jurisdictions designate partial or all responsibility to the event organizer. Stakeholders representing the event traffic management team should consider conducting a pre-event walk-through, done a few days before the event to permit modifications, to review the final site plan and traffic management plan.

Table 4-6 provides a snapshot of select jurisdictions and criteria referenced by officials when rendering a final decision on a special event permit application. Due to the changing dynamics of planned special event operations, jurisdictions, particularly in metropolitan areas, may issue a special event permit only days in advance of the event date.

Table 4-7 presents a list of common event organizer tasks performed during the special event permit process coupled with example deadlines. A common prerequisite to obtaining a local jurisdiction event permit involves the event organizer securing permits from all jurisdictions controlling roadways slated for temporary full/partial closure. This represents a program planning initiative for managing all planned special events in a

Table 4-6
Planned Special Event Permit Application Decision Criteria

LOCATION	EVENT CATEGORY	APPROVAL CRITERIA
Anaheim, CA	Street use event	<ul style="list-style-type: none"> • Time of the proposed parade. • Place of the proposed parade. • Manner in which the proposed parade is to be held. • Other proper uses of the streets such as construction/maintenance or pedestrian traffic; construction/maintenance on the streets involved in the proposed parade route.
Menlo Park, CA	All special events	<ul style="list-style-type: none"> • Day(s) of the week; time of day; number of days. • Venue distance from nearest legal residential use. • Number of people involved. • History of complaints.
Minneapolis, MN	Street use event	<ul style="list-style-type: none"> • Conduct of the parade/race does not substantially interrupt the safe and orderly movement of other traffic contiguous to its route or will interfere with street maintenance or other legally permitted events. • Concentration of persons, animals, and vehicles at assembly points of the parade/race will not unduly interfere with proper fire and police protection of, or ambulance service to, areas contiguous to such assembly areas. • Conduct of such parade/race will not interfere with the movement of firefighting equipment en-route to a fire. • Parade/race is scheduled to move from its point of origin and to its point of termination expeditiously and without unreasonable delays en-route.
Redmond, WA	All special events	<ul style="list-style-type: none"> • Event does not disrupt traffic beyond a practical solution. • Event does not interfere with access to fire stations and fire hydrants. • Event does not cause undue hardship to surrounding businesses and residents. • Event does not require the diversion of so many public employees that service is denied to other local residents.
Reno, NV	All special events	<ul style="list-style-type: none"> • Event will not conflict with established on-going events. • Event will not create a substantial interruption of public transportation or other traffic; conflict with development in the right-of-way; close major streets during peak commuter hours. • Event will not cause a diversion of such a great number of police employees that police protection of the remainder of the city is in jeopardy. • Event will not create undue interference with emergency vehicles. • Availability of sufficient traffic controllers, crowd monitors, safety equipment, or insurance coverage.
West Des Moines, IA	All special events	<ul style="list-style-type: none"> • Route of the event. • Date and time of event. • Maximum length of the event • Impact on residential and commercial neighbors. • Limitations on public use of area requested for event. • Number of events previously scheduled in the city on the same date. • Amount of city personnel necessary to regulate and monitor the event. • Interference with peak transportation periods, movement of the transit vehicles, movement of authorized emergency vehicles, and schedules of various construction projects. • Participant provisions including parking and dispersal routes.

Table 4-7
Event Organizer Special Requirements

TASK	DEADLINE	SPECIFICATIONS
Gain inter-jurisdictional approval	<ul style="list-style-type: none"> 30 days before event.¹ 	<ul style="list-style-type: none"> Secure appropriate approval if temporarily closing roadways under the control of another jurisdiction.
Notify transit service	<ul style="list-style-type: none"> 1 month before event.² 	<ul style="list-style-type: none"> Communicate street closure specifics for bus re-routing.
Deliver public presentation	<ul style="list-style-type: none"> 30 days before event.¹ 	<ul style="list-style-type: none"> Present special event management plan to appropriate neighborhood associations or local planning board for review and recommendation.
Confirm personnel resources	<ul style="list-style-type: none"> 21 days before event.³ 	<ul style="list-style-type: none"> Obtain written confirmation from stakeholders that sufficient traffic management team personnel resources will be available on the day-of-event. Use private staff to patrol private parking lots (not responsibility of on-duty law enforcement officers). Off-duty law enforcement officers must be hired to provide VIP/dignitary escorts and to staff traffic control posts.
Secure parking areas	--	<ul style="list-style-type: none"> Obtain written confirmation to use private parking lots (schools, churches, businesses).
Notify emergency services	<ul style="list-style-type: none"> 14 days before event.³ 	<ul style="list-style-type: none"> Inform fire departments and emergency medical service of the exact location, date, and time of planned road closures.
Inform affected property owners	<ul style="list-style-type: none"> 30 days before event.⁴ 14 days before event.⁵ 10 days before event (14 days for review).³ Minimum 2 days before event and 7 days maximum.⁶ 	<ul style="list-style-type: none"> Distribute an approved road closure notice to all property owners adjacent to a planned road closure. Notify property owners, residents, and businesses within 300 feet of the event venue. Distribute parking passes and/or escort passes issued by governing jurisdiction.
Disseminate public advertisement	<ul style="list-style-type: none"> 15 days before event.² 7 days before event.³ 2 days before event.⁷ 	<ul style="list-style-type: none"> Publicize the special event through the media, including newspapers, radio and/or television stations. Identify the event date and time, contact information, any traffic and parking restrictions, and a map of the street use event route. Require review of announcement by public stakeholders.
Prepare implementation plan	<ul style="list-style-type: none"> 7 days before event.³ 	<ul style="list-style-type: none"> Summarize traffic management plan specifics. Require plan for review by public stakeholders.
Prepare operations detail	<ul style="list-style-type: none"> Complete before event. 	<ul style="list-style-type: none"> Indicate traffic management team personnel assignments and day-of-event operations activities. Specify radio or cellular interface between agencies comprising the traffic management team.
Hire on-site coordinator	--	<ul style="list-style-type: none"> Hire a public employee as an overall on-site coordinator, having decision-making authority, whose responsibility will be to ensure that all services are provided, the event runs smoothly, and all governing regulations and ordinances are complied with.
Day-of-event activities	--	<ul style="list-style-type: none"> Install temporary signs and traffic control devices. Maintain an approved copy of the permit application during the entire special event.
Post-event activities	<ul style="list-style-type: none"> 2 hours after event close.⁸ 30 days after event for report.⁹ 	<ul style="list-style-type: none"> Remove temporary signs and traffic control devices. File post-event report. Participate in post-event debriefing with public agencies, affected citizens, and other involved stakeholders to address issues that arose during the event.

Notes: ¹ Miami Beach, FL mandate.

³ Larimer County, WY mandate.

⁵ Reno, NV and San Diego, CA mandate.

⁷ Pitken County, CO mandate.

⁹ U.S. Bureau of Land Management mandate.

² Louisville, KY mandate.

⁴ San Luis Obispo, CA mandate

⁶ Minneapolis, MN mandate.

⁸ Larimer County, WY and Kane County, IL mandate.

region. Appendix A contains Washington State DOT guidelines for street use events conducted on state highways.⁽³⁾ Key event organizer actions typically performed upon receipt of an approved special event permit include:

- Notifying emergency service agencies of temporary road closures and access restrictions.
- Informing property owners and residents, located in the immediate vicinity of the event venue, of traffic and parking restrictions.
- Disseminating travel and parking information to community residents, representing potential event patrons, via media advertisements.

Application Components

Table 4-8 summarizes the various items that appear, in a questionnaire format, on a special event permit application. The application serves to communicate event operations characteristics to a jurisdiction, thus permitting it to impose appropriate impact mitigation requirements and/or advise the event organizer to change event operation parameters. Key items include the event purpose that may signal the need to develop contingency plans in response to possible security threats or demonstrations. Information regarding event history and expected attendance assists in achieving a more predictable event travel forecast. The application should prompt the event organizer to indicate travel demand management initiatives, including use of carpools and other modes of travel. Appendix A contains a sample special event permit application from Virginia Beach, VA.

Table 4-8
Planned Special Event Permit Application Components

APPLICATION COMPONENT	SPECIFICATIONS
Event sponsor/organizer	<ul style="list-style-type: none"> • Organization, corporation, community group, etc. sponsoring event in addition to professional firm/agency contracted to produce the event.
Primary contact and coordinator	<ul style="list-style-type: none"> • Decision-making authority and continuously available through the day-of-event activities phase. • Mailing address, e-mail address, phone (day/night/cell/radio frequency), and fax. • Location on day-of-event.
Event name/type of event	<ul style="list-style-type: none"> • Name used to advertise event.
Event date and time	<ul style="list-style-type: none"> • Event date(s). • Hours of operation on each event day. • Duration of event (if street use event). • Proposed timeline of activities through the event day(s). • Rain date.
Event location	<ul style="list-style-type: none"> • Location (e.g., street address). • Venue attendance capacity. • Temporary venue, permanent venue, on-street. • Zoning classification of property and/or present use of venue site. • Alternate location.
Event purpose	<ul style="list-style-type: none"> • Description of event. • Indication whether event differs from previous years. • Indication if event is political in nature.

Table 4-8 (cont'd.)
Planned Special Event Permit Application Components

APPLICATION COMPONENT	SPECIFICATIONS
Event history	<ul style="list-style-type: none"> • Number of times event has been held. • Event produced in other cities. • Receipt of a special event permit in the past by the event organizer. • Event organizer's experience in handling special events.
Expected attendance	<ul style="list-style-type: none"> • Attendance per day. • Peak attendance at any given time. • Number of participants and spectators. • Basis for projection. • Attendance at past event occurrences. • Target age group (e.g., percent attendance by age group). • Estimated number of vehicles generated (cars and busses).
Event preparation	<ul style="list-style-type: none"> • Set up and tear down (date and time) • Description of required activities.
Audience accommodation	<ul style="list-style-type: none"> • Admission charge. • Parking charge.
Street use event route	<ul style="list-style-type: none"> • Route to be traveled or occupied. • Assembly location and time. • Completion point. • Rest stop areas. • Estimated length of parade (front to rear). • Maximum interval of space to be maintained between parade units. • Minimum and maximum speed of the parade. • Number and type of parade floats/vehicles. • Number of pedestrians and number/type of animals in parade.
Street closures	<ul style="list-style-type: none"> • Reason for using a non-local roadway. • Street segments (indicate by cross streets) and direction of travel. • Use of entire street width for event. • Occurrence of event in intersections. • Bridge closure. • Closing date and time and opening date and time. • Affected bus transit routes.
Traffic control	<ul style="list-style-type: none"> • Name of private company providing traffic control equipment. • Date and time of temporary traffic control equipment setup and removal. • Overview of directional signing, number and type of sign.
Access and parking	<ul style="list-style-type: none"> • Available emergency vehicle access. • Sidewalk and parking lot closures. • Use of public parking lots intended. • Establishment of reserved/VIP parking areas. • Use of off-site parking areas. • Covering of parking meters.
Transportation	<ul style="list-style-type: none"> • Narrative on anticipated congestion impacts and proposed mitigation. • Special arrangements for dignitaries. • Use of a charter or express service intended. • Use of public transportation intended. • Development of initiatives to encourage transit use.

Table 4-8 (cont'd.)
Planned Special Event Permit Application Components

APPLICATION COMPONENT	SPECIFICATIONS
Personnel	<ul style="list-style-type: none"> • Number of volunteers and staff working the event. • Intended volunteer work assignments. • Number of staff working in a supervisory capacity. • On-site communications, cellular or radio.
Event notification and advertisement	<ul style="list-style-type: none"> • Notification of other involved jurisdictions and whether a permit has been obtained. • Use of media to advertise event (radio, television, print, Internet). • Use of a process to notify affected property owners and residents.
Dismantling and clean-up	<ul style="list-style-type: none"> • Restoration of roadway right-of-way and other public property. • Clean-up start and end times.

Table 4-9 lists supplemental requirements to a special event permit application, required of the event organizer either at the time of initial application submission or after jurisdiction review of the application questionnaire. Traffic flow plans that specify a street use event route should identify any: (1) hindering of access by authorized emergency vehicles, (2) conflict with bus transit routes, and (3) interference with non-event attendee access to hospitals, airports, transit stations, businesses, churches, and other public buildings. Traffic control plans should address in detail the service and protection of event patron traffic, the accommodation of emergency vehicles and background traffic, and the necessary traffic control equipment and personnel resources. The event site plan and parking plan must provide accessible parking and routes to the event venue. As an example, Table 4-10 shows Miami Beach, FL special event parking and site plan guidelines for compliance with the Americans with Disabilities Act.

Jurisdictions require event organizers to sign a *hold harmless* agreement and post a certificate of insurance, typically \$1 million, before issuing a special event permit. Appendix A contains a sample hold harmless agreement from Evanston, IL.

Permitting Requirements

Jurisdictions maintain the following general requirements for planned special events: (1) event restrictions, (2) impact mitigation and traffic control, (3) legal, and (4) funding. As indicated in Table 4-11, the municipal codes of jurisdictions across the Nation specify a wide range of requirements for managing travel for planned special events, all of which become incorporated in the special event permit process. The previous sections highlighted several requirements and associated examples under the first three cited categories. With regard to traffic control, Appendix A contains a Hot Springs, AR checklist of traffic control requirements for street use events using a particular city street. This checklist serves as a traffic management and operations plan for *recurring* street use events on the cited street, thus permitting traffic management team members to become proficient at efficiently managing traffic for events on the designated route. Appendix A also contains a detailed traffic control resource checklist, complete with equipment specifications, used in Montgomery County, MD and special event directional sign regulations maintained in Marco Island, FL.

Table 4-9
Planned Special Event Permit Application Supplemental Requirements

APPLICATION COMPONENT	SPECIFICATIONS
Event site plan	<ul style="list-style-type: none"> • Identify access points/gates, traffic circulation, lighting, and sign locations. • Show location of fencing, barriers, and/or barricades including temporary fencing that can be removed for emergency vehicle access. • Show adjacent external roads. • Show emergency and handicap accessible routes. • Identify location for a command/communication center. • Provide computer-assisted drawing.
Traffic flow plan	<ul style="list-style-type: none"> • Provide map of street use event route. • Show street use event staging and disbanding area. • Indicate required sidewalk, street, and parking lot closures. • Indicate affected transit routes and proposed mitigation. • State locations and/or parking meter numbers that require covering. • Indicate traffic flow routes and capacity (e.g., number of travel lanes, etc.)
Traffic control plan	<ul style="list-style-type: none"> • Specify temporary directional sign, advance warning sign, barricade, and traffic cone locations. • Conform to Manual on Uniform Traffic Control Devices specifications. • Allow for a continuous, through traffic lane, typically 20 feet wide, on closed roads for use by public safety personnel in an emergency. • Show proposed alternate routes. • Indicate how normal traffic pattern will be accommodated. • Describe how local resident and commercial traffic has access during the event. • State what stakeholder furnishes, installs, and removes traffic control equipment. • Specify temporary, removable pavement markings only. • Provide traffic control agent or law enforcement officer (signalized intersections especially) at all intersections requiring traffic control. • Provide volunteers to monitor barricades at all intersections not requiring traffic control personnel. • Indicate pedestrian access routes and major pedestrian crossings.
Parking plan	<ul style="list-style-type: none"> • Show parking sites (e.g., paved and unpaved) and access points. • State the number and size of vehicles planned to stage for the event in addition to the staging location. • Accommodation of media vehicles. • Indicate number of spaces available. • Include valet parking and route. • State the number of parking staff required. • Indicate parking lot assignments (e.g., permit, public, fee), costs, and vehicle processing procedures.
Emergency evacuation plan	<ul style="list-style-type: none"> • Evacuation routes.
Notice of event for affected property owners and residents	<ul style="list-style-type: none"> • Present event concept. • Indicate travel impacts in addition to planned parking and traffic restrictions. • Distribute to residents, businesses, schools, places of worship, and other affected entities.
Event advertising brochure	<ul style="list-style-type: none"> • Provide event operations information (e.g., times, dates, ticket information). • Indicate travel information (e.g., directions, parking, travel incentives).

Table 4-9 (cont'd.)
Planned Special Event Permit Application Supplemental Requirements

APPLICATION COMPONENT	SPECIFICATIONS
Hold harmless agreement	<ul style="list-style-type: none"> Specify that event organizer agrees to defend, indemnify, and hold a municipality, including its officers and employees, harmless from any liability or claim caused by the event organizer failing to fulfill all obligations.
Certificate of Insurance	<ul style="list-style-type: none"> Require event organizer to obtain and name the governing municipality and its employees as insured. Name transportation agencies as insured. Ranges from \$500,000 to \$1,000,000.

Table 4-10
Guidelines for Compliance with the Americans with Disabilities Act⁽⁴⁾

REQUIREMENT
<ul style="list-style-type: none"> All on-site accessible pedestrian routes from accessible parking to the event must be equipped with curb cuts or temporary ramps. All ramps must meet applicable codes. Additional disabled parking must be provided and staffed. A disabled parking area must be designated and located near to the main entrance and accessible to pedestrian routes. Necessary signs must be provided to indicate this parking area. An accessible shuttle may be used for remote parking areas. All Americans with Disabilities Act considerations must be identified on the site plan.

Section 12200 of the California Vehicle Code defines a *special event monitor* as a person who has completed a traffic control program approved by the California Highway Patrol. Use of special event monitors reduces demand on law enforcement staff needed for security detail and highway patrol. Jurisdictions in California require these trained monitors, when the day-of-event

training program is available, during permitted special events. For instance, the County of San Diego, CA specifies the following traffic control requirements during planned special events:

Table 4-11
Municipal Code Provisions on Planned Special Events

PROVISION
<ul style="list-style-type: none"> Special event definition Conditions for permit requirement Permit restrictions Content of permit application Permit application submission and review deadline Notification of city/town officials Notification of abutting property owners and residents Permit approval criteria Event organizer duties City/town authority to restrict parking and close local roads Hold harmless clause Insurance requirements Recovery of expenses Procedure for appealing a denied permit

- *Traffic control is to be provided at various locations, such as, narrow road segments, intersections, and starting or ending points.*
- *Only properly trained or certificated personnel (by a training program approved by the Commissioner of the California Highway Patrol) are to handle the traffic control responsibilities.*
- *Traffic controllers shall wear orange vests and utilize a "Stop/Slow" paddle.*
- *Advance warning signs shall be placed, well in advance of any personnel and the event, to alert oncoming vehicles of the supplemental traffic control and the event.*
- *Traffic controllers will avoid delays or back up of traffic onto primary County roadways such that "grid-lock" does not happen; waits of more than two minutes are excessive and will not be allowed.*
- *Adjacent driveways to neighboring businesses and residences will not be blocked.*

Funding

Public agencies recover costs incurred in providing services during the event operations planning phase and resources on the day-of-event through event organizer fees and other funding mechanisms. Table 4-12 lists special event permit application fees for a select number of jurisdictions across the country. Table 4-13 describes five different approaches used by jurisdictions to obtain cost reimbursement for staff and equipment rental.

After an August 2002 Grateful Dead concert attracted 35,000 spectators at an amphitheater in rural Walworth County, WI, and event stakeholders prepared to turn away thousands of expected ticketless spectators, county officials passed an innovative ordinance, *Recovery of Expenses Incurred for*

Providing Extraordinary Governmental Services. Appendix A contains a copy of the cited ordinance, Section 10-28 of the Walworth County Code.

The social and economic benefits yielded by planned special events, in addition to the purpose of select events, result in jurisdictions periodically waiving cost reimbursement requirements even for privately sponsored special events. Table 4-14 lists criteria that planned special events in Louisville, KY must meet for City provision of free services for event operation and management.

INFRASTRUCTURE SUPPORT



Technology Applications

While the most critical aspect of managing travel for planned special events is the coordination of the many stakeholders involved, technology lends an assisting hand to the effort. Technology is fast becoming a mainstay in every aspect of transportation, from road maintenance and snow removal to incident management and emergency evacuation. Special event management is no different in this regard. The variety of technologies and their application serve to assist managers in both informing travelers of an upcoming event as well as monitoring and managing the event in real-time.

Most technology applications, as they relate to travel management, fall under the category of Intelligent Transportation Systems (ITS). ITS is comprised of a number of technologies, including information processing, communications, control, and electronics. These technologies are comprised of tools that can be deployed permanently for uses other than planned special events or

Table 4-12
Planned Special Event Permit Application Fees

LOCATION	PERMIT FEE	LOCATION	PERMIT FEE
Anaheim, CA	\$25	Palm Beach Gardens, FL	\$50 per event day
Fort Collins, CO	\$25	Ypsilanti, MI	\$50-\$100
Lancaster, PA	\$25	Charlotte County, FL	\$87
Larimer County, WY	\$25	Virginia Beach, VA	\$75-\$150
Louisville, KY	\$25	Branson, MO	\$100
Marysville, WA	\$25	Clarksville, TN	\$100
Stamford, CT	\$25	West Des Moines, IA	\$100
West Palm Beach, FL	\$25	West Sacramento, CA	\$125
Minneapolis, MN	\$25 parade; \$100 + \$0.50/participant for race	Miami Beach, FL	\$250 application fee; \$250 permit fee
Lincoln, NE	\$45	Mount Pleasant, TX	\$250
Kane County, IL	\$50	Pitken County, CO	\$275
Marco Island, FL	\$50		

Table 4-13
Planned Special Event Funding Mechanisms

FUNDING MECHANISM	COMMENTS/EXAMPLES
Event organizer pays a deposit with permit application submission.	<ul style="list-style-type: none"> Applies to events necessitating road closure. Deposit is reimbursed if all road closure requirements are fully complied with (\$500 – Larimer County, WY) Requires \$2,500 refundable security deposit no later than 30 days in advance (Miami Beach, FL). Requires a \$1,000 security deposit, returned if the transportation department determines the roadways are in good or better condition than before the event took place (Kane County, IL). Requires a \$25 deposit on each city owned traffic control device used during an event (Golden, CO).
Public agency sends post-event invoice to the event organizer for resources used.	<ul style="list-style-type: none"> Allows event organizer to be charged for law enforcement, traffic engineering, and public works services. Requires four-hour minimum charge for each public employee engaged by the event organizer (Miami Beach, FL).
Event organizer pays for estimated, required public agency resources before event.	<ul style="list-style-type: none"> Requires event organizer pre-payment or bond posting before issuing an event permit (Anaheim, CA). Requires event organizer to submit payment for services and equipment two weeks before the event (Miami Beach, FL). Requires event organizer to pay for parking meter rentals (\$10 per meter/day for Miami Beach, FL; 50% of the standard fees in Denver, CO) and rental of public parking lots (Ypsilanti, MI requires 20% gross revenue sharing) as applicable.
A charge on each ticket sold is set to recover expenses incurred for providing extraordinary governmental services.	<ul style="list-style-type: none"> Establishes Ordinance No. 232-11/02 (Walworth County, WI).
Event organizer posts a performance bond.	<ul style="list-style-type: none"> Covers post-event street cleaning and/or damages to roadway infrastructure.

Table 4-14
 Louisville, KY Criteria for Providing Free
 Services for a Special Event⁽²⁸⁾

CRITERIA
<ul style="list-style-type: none"> • Ability of the City to provide all or part of requested support services. • Extent to which the event is economically, socially, and culturally beneficial to the community. • Intended use by the sponsoring organization of any revenue over and above expenditures. • Impact of the event (positive or negative) on normal commercial activities. • Extent to which the event contributes toward the promotion of tourism.

deployed temporarily during the special event only. Table 4-15 discusses these technologies and implementation alternatives in more detail. Joining these technologies to our transportation system will save lives, save time, and save money.⁽⁶⁾ In its infancy, ITS addressed incident management, but over time, it has become an application of management strategies to improve mobility in everyday responsibilities of transportation managers of various modes. Mobility may be defined as ability and knowledge to travel from one location to another using a multi-modal approach. ITS not only benefits the transportation managers, but other service providers such as emergency service providers (e.g., police, fire, ambulance) and support providers such as towing services. In short, ITS has become a significant enabler for operating and managing the transportation network. ITS is a tool for transportation managers, and as such, it augments the many non-technical activities to plan and manage an event.

At one time, ITS was characterized as technology looking for a problem. Over the years, transportation managers realized the need to first identify needs and problems, and then associated solutions, usually technological, to those needs. As such, ITS applications are grouped into services they can

provide, or more simply as functions. In the realm of managing planned special events, there are a number of functional areas that technology can support. The following sections describe these functional areas in greater detail.

Traffic Management

Traffic management is the most common function associated with special event planning and management. It includes the real-time detection, surveillance, and management of traffic conditions. In a typical event management scenario, managers and operators would monitor traffic, pedestrian, and parking conditions in real-time using various technologies, and modify control strategies such as modifying traffic signal and ramp meter timing, transit priority, opening gates for high occupancy vehicle (HOV) lane access, to name just a few. This function also forms the basis for collecting much of the information communicated to travelers. There are a number of specific management strategies that encompass traffic management:

- **Arterial traffic management** differs considerably from that of the freeway. While the basics are similar – detect or survey, verify, respond and inform – the strategies and tools are not. As a rule, streets do not have any available capacity compared to the using of a freeway shoulder, for instance. Parking can be removed, but there is an economic and social price to pay to remove parking. Two-way streets can be made to operate in one direction, but this, too, can come at significant cost.

Successful arterial traffic management results from utilizing every bit of roadway capacity and adapting to changing traffic conditions. Typically, streets are

Table 4-15

Planned Special Event Technology Applications

ITEM	FUNCTIONS	DEPLOYMENT	APPLICATION	BENEFIT
Detectors	Traffic Management	Permanent – in field. Portable – on trailers for temporary deployment.	<ul style="list-style-type: none"> • Provides the managers at the Transportation Management Center (TMC) with reliable, real-time information on conditions in the field. • Collects various data, but the most common are vehicular or travel speed, volume and occupancy. • Includes inductance loop detectors and infrared or ultrasonic detectors placed in, over, or beside the highway. • Uses portable detection systems installed on trailers that allow for locating the technology anywhere in the event area that managers want to survey. 	<ul style="list-style-type: none"> • Provides a status of real-time traffic conditions on the highway to managers so they may adapt their plans as conditions warrant.
Closed-Circuit Television (CCTV)	Traffic Management	Permanent – in field. Portable – on trailers or permanent structures for temporary deployment.	<ul style="list-style-type: none"> • Consists of one of the oldest and most reliable methods of surveying the network in real-time. • Uses cameras installed in the field to monitor conditions in real time. • Allows systems to be located temporarily for the event using trailer-mounted rigs. • Whether permanent or portable, provides managers at the TMC with real-time video of conditions on the highway, allowing them to adapt their plans accordingly. 	<ul style="list-style-type: none"> • Provides managers instant information on the status of the highway, transit station, or pedestrian mall to managers to allow them to react quickly to issues, thereby minimizing impacts to users.
Transportation Management Center (TMC)	Traffic and Transportation Management	Permanent. Portable – in mobile trailer or van. Virtual – a single person connected to the central systems from any remote location.	<ul style="list-style-type: none"> • Serves as the nerve center where the event managers from various disciplines, transportation and other, work together to ensure close coordination. • Often includes a “situation room” where the event managers work, all the time being in contact with the control room. • Utilizes many technological tools at the TMC including: (1) map displays showing real-time traffic and transit conditions, (2) video display walls, (3) changeable message sign, (4) closed-circuit television control systems, (5) telephone and radio communications to communi- 	<ul style="list-style-type: none"> • Provides a single location where all the managers of the agencies involved with the special event can work face-to-face and be able to communicate with their respective operators and field personnel.

ITEM	FUNCTIONS	DEPLOYMENT	APPLICATION	BENEFIT
			<p>cate with their field liaisons, and (6) incident management and traffic signal control systems.</p> <ul style="list-style-type: none"> In most cases, consists of a government agency facility, but in some specialized cases, such as at stadium venues, the venue itself may house this coordination center. 	
Mobile Telephone	Traffic Management Traveler Information	Portable.	<ul style="list-style-type: none"> Provides common form of communication between event managers and field personnel. Provides real-time traffic conditions to managers (i.e., manual detection) and permits receipt of real-time traffic conditions information through a paging service or by dialing into a telephone information system (see below). 	<ul style="list-style-type: none"> Allows managers to stay in communication with their field personnel at all times via cell phone. As a traveler information device, transmits information on real-time conditions to digital telephones equipped to receive text messages. There is a large potential market for this form of traveler information. Requires timeliness since 3rd party Information Service Providers (ISPs) are used.
Personal Digital Assistants	Traveler Information Traffic Management	Portable.	<ul style="list-style-type: none"> Sends real-time traffic conditions to pagers registered to receive the traveler information. Allows two-way pagers (e.g., Blackberry™) to be used by field personnel to report problems or by travelers to do the same. 	<ul style="list-style-type: none"> Has a large potential market for this technology for traveler information. Requires timeliness since 3rd party ISPs are used.
Internet	Traveler Information Advertising	Permanent. Accessible from any location with connectivity.	<ul style="list-style-type: none"> Permits dissemination of information regarding new traffic patterns, restrictions, etc. (along with other information regarding the event) well in advance of the date(s) of the event. Provides real-time information regarding the travel conditions along the affected routes, incidents that are impacting traffic flow, and available parking. Aims to reach travelers <i>before they commence their trip</i>. 	<ul style="list-style-type: none"> Reaches large audience of pre-trip travelers. Offers subscription e-mail service to notify traveler of an alert on their preferred routes. As a rule, provides free service with the subscription to an ISP.
Changeable Message Sign	Traveler Information	Permanent – in field.	<ul style="list-style-type: none"> Informs travelers (en-route) prior to the upcoming event of 	<ul style="list-style-type: none"> Reduces congestion by informing motor-

ITEM	FUNCTIONS	DEPLOYMENT	APPLICATION	BENEFIT
	Advertising	Portable – on trailers for temporary deployment.	<p>its expected impact, infrastructure changes (e.g. road or lanes closures, parking restrictions).</p> <ul style="list-style-type: none"> Provides real-time traveler information during the event (e.g., roadway conditions, incidents, parking availability). 	<p>ists in advance of the event so they may alter their routes or mode choices.</p> <ul style="list-style-type: none"> Informs en-route travelers of potential problems such as full parking areas.
Highway Advisory Radio	Traveler Information	<p>Permanent – in field.</p> <p>Portable – on trailers for temporary deployment.</p>	<ul style="list-style-type: none"> Similar to CMS, informs en-route motorists of an impending problem ahead. Typically uses warning signs to inform motorists that an important message is being broadcast. Allows messages to be controlled from a remote location, such as a TMC. Technologically, consists of a low-power (e.g., 10-watt) transmitter located near the roadside. 	<ul style="list-style-type: none"> When applied correctly, provides significant benefit to en-route motorists who must be advised of a traffic incident or congestion ahead.
Telephone Information System	<p>Traveler Information</p> <p>Traffic Management</p>	Permanent – call center remains at a fixed location.	<ul style="list-style-type: none"> Provides a phone-in service to provide real-time traffic condition information to en-route and pre-trip travelers. Stores real-time conditions in a database. Callers, with the help of computerized telephony, are routed to a recording of, or a live operator stating real-time conditions on the segment of highway requested by the caller. As a national 511 initiative, serves as both a traveler information and traffic management tool, in that it provides current traffic conditions to callers as well as allows callers to report incidents on the network. 	<ul style="list-style-type: none"> Serves as a very useful tool in providing current traffic conditions to travelers. Often can be an expensive undertaking. Has generated a number of success stories during the 511 program's short life.
Traffic Signal System	Traffic Management	<p>Permanent – Closed Loop Signal Systems.</p> <p>Permanent – Centrally controlled traffic signal systems.</p> <p>Permanent – Centrally controlled adaptive signal systems.</p>	<ul style="list-style-type: none"> Signal systems are commonly installed along arterial streets to optimize traffic flow and minimize delay. Closed Loop Signal Systems and Centrally controlled signal systems allow system operators to download and implement special signal timing plans for special event management. These plans will optimize traffic operations during event ingress and egress. Adaptive traffic signal systems, due to a high level of detectorization and sophisticated system 	<ul style="list-style-type: none"> Increases the efficiency of the street network and reduces the delay on the network.

ITEM	FUNCTIONS	DEPLOYMENT	APPLICATION	BENEFIT
			programming, will adjust to event-generated traffic flows and optimize traffic operations during event ingress and egress. With adaptive signal systems, the engineering of event timing plans is largely accommodated by the system. However, adaptive systems are considerably more expensive to install than either Closed Loop or centrally controlled systems.	
Parking Information Systems	Traffic Management	Permanent.	<ul style="list-style-type: none"> • Outfits parking lots and garages with detection and surveillance technology to determine the available number of spaces. • Collects information via detection and surveillance technology that is then processed by algorithms in computer systems, and can determine what space is available, using actual counts and predictive algorithms. The parking status is then conveyed to signs at the entrance or to an advanced traffic management system to be placed on CMSs or broadcast on HAR or commercial radio. • At arenas or stadiums, alerts motorists not to exit from a freeway to a parking lot if it is full, and directs them to available parking locations. 	<ul style="list-style-type: none"> • Reduces the circling pattern of vehicles in a downtown area by informing motorists of the unavailability of parking spaces.
Commercial Radio or Television Stations	Traveler Information	Permanent. Accessible from any location with connectivity.	<ul style="list-style-type: none"> • Broadcasts traffic reports on a regular basis, typically during peak traffic periods or periods of special events. The information is received from aerial spotters or advanced traffic management systems. 	<ul style="list-style-type: none"> • If broadcasted in a timely manner, reaches the most travelers and provides them with information to change their route or mode to ensure the most efficient network for prevailing conditions.

managed by traffic signal systems, and one of the most beneficial signal strategies for planned special events is the use of modified timing plans to optimize traffic operations during event ingress

and egress. Several strategies, having various levels of complexity, exist for managing traffic signal systems on arterial highways. The best strategies available for special event management in-

clude: (1) remote modification of the system, (2) individual signal timing in response to changing conditions, and (3) highly sophisticated adaptive control systems, which, due to a higher level of data acquisition and system programming, automatically adapt to changing traffic flows. Closed Loop Signal Systems, which are relatively inexpensive and are becoming widely used, offer a means of implementing planned system timing plans designed for a particular special event. Individual signals and system timing can be monitored and modified remotely from a transportation management center or any other location equipped with a personal computer and modem.

The more sophisticated centrally controlled traffic signals have a fixed communication system between the traffic signals and a control center. The traffic signals and signal systems under control are constantly monitored. These systems generally have a higher level of programming sophistication than the Closed Loop Systems. Planned special event management is accommodated in much the same way as with Closed Loop Systems, with special timing plans being downloaded into the system in response to event conditions. The timing plans are configured in advance, but as with Closed Loop Signal Systems, can be modified from a transportation management center in response to changes in the field.

Adaptive control systems represent the most sophisticated traffic signal systems. These systems require considerably more detector input and communication ability. Adaptive control systems rely on intricate software packages to produce an ever-evolving signal timing

plan. These systems have the capability to continuously adapt to changing traffic patterns, thus optimizing traffic flow. With adaptive traffic signal systems it would not be necessary to download special signal timing plans in order to manage a special event. The adaptive traffic signal systems would automatically adapt to changes in traffic caused by additional event-generated traffic.

- **Ramp management** represents a freeway strategy that controls the amount of traffic entering and exiting a freeway in order to maintain or increase its efficiency. It is typically provided by means of metering or closing ramps. The theory behind metering is that the rate at which vehicles enter a freeway is controlled, reducing turbulence at ramp junctions where most congestion occurs. This, in effect, improves the efficiency of the mainline freeway, thus reducing a vehicle's overall trip time. Ramp closure is rarely used as a long-term solution, but can be implemented when the capacity of an entrance or exit ramp is exceeded and the resulting queues jeopardize safety.
- **Lane use management** is a process used to maximize benefits and use of existing pavement, and improve the safety and efficiency of freeway operations. Lane use management is typically exercised through use of signs (static and dynamic), temporary traffic control devices, economic incentives and disincentives, and law enforcement. Lane use management includes designating certain lanes for the use by a particular class of vehicles (e.g., buses, carpools), the use of shoulders as a traveled lane during peak periods, contra-flow lanes, reversible lane control, and lane use control. Lane use control uses dynamic

signing to indicate whether a lane is open (green arrow pointing down over a lane), closed (red “X” over a lane), or is closed ahead (a diagonally cocked color arrow over the lane).⁽⁷⁾

- **Incident management** represents an operational approach used on both free-ways and arterials that employs all of the available resources, including human and technological, to identify, manage, and clear incidents from a freeway in a quick and effective manner. In the transportation management center, operators utilize networks of closed-circuit television cameras, vehicle detection sensors, incoming 911 or 511 reports, incoming media reports, and mobile reports (from service patrols, police, maintenance personnel, and motorists) to monitor, verify, and determine the scope of incidents to quickly dispatch the appropriate emergency response personnel and equipment. This saves valuable time when treating the injured and minimizes the effects incidents have on traffic conditions. After field personnel arrive at the incident scene, TMC operators continue to monitor the incident and conditions surrounding the incident to inform travelers of traffic conditions.⁽⁷⁾
- **Parking management** facilitates improved and sustained mobility - moving traffic through a location quickly, with little delay, and only once. Parking management supports effective mobility by managing parking facilities. In this discipline, systems monitor and survey the available capacity of parking facilities, both surface lots and garages, and communicate the availability or non-availability of spaces to motorists. In doing so, motorists do not congest the highway network by traveling from

parking location to parking location in hopes of finding an available space.

Traveler Information

To ensure the successful management of a special event, it is vital to communicate with travelers to inform them of anticipated (future) and current conditions on the network:

- One goal is to provide the conditions information to en-route travelers so they may alter their route or mode, and to pre-trip travelers so they may alter their trip planning. Information that can be provided includes current traffic conditions, congestion, lane or turn restrictions, HOV restrictions, alternate routes, parking availability, and road closures and the relevant time periods.
- A second goal is to inform the public of the event well enough in advance to allow intended travelers, whether event attendees or not, to change their travel *habits* prior to the event.

Various means and technologies are used to disseminate information to the public. Information is provided to:

- Pre-trip travelers via websites, media broadcasts, and mobile communication devices (e.g., personal digital assistants, pagers, and cell phones).
- En-route travelers via roadside devices such as changeable message signs and highway advisory radio, and in-vehicle via commercial radio.
- Both pre-trip travelers and en-route travelers through mobile phones, web-enabled wireless phones, pagers and personal digital assistants (PDA).

In support of these functions, there are many technologies in the realm of ITS that have been incorporated for special event man-

agement. Not all of these are a single technological device, nor are all of the parts provided by the managing agency alone.

Funding Sources

Current funding practice typically favors building new or rehabilitating existing transportation facilities over operational improvements, such as freeway management systems. A key reason is that agencies do not consider operations as a distinct line item in their budget. Freeway management systems require both capital and maintenance funding. This topic has been under discussion for several years, and few agencies have been willing to attempt new approaches.⁽⁷⁾

Involvement by the freeway practitioner in funding processes and decisions cannot be over-emphasized. As noted in the Millennium Paper prepared by the Transportation Research Board Freeway Operations Committee, "If funding for deployment of freeway management systems and programs, and their ongoing operations and expansion, is not budgeted and the necessary resources allocated, the freeway investments will deteriorate and eventually become useless."⁽⁸⁾

Funding for ITS initiatives always has been a challenge and is tied in closely with how well we sell the concept of freeway operations and management. Because of tighter controls on money and a never-ending list of ways to spend it, there will continue to be challenges in the search for new sources of funding to continue expanding the existing infrastructure. Such new concepts as partnerships between the private and public sectors, outsourced design/build/operate contracts for transportation infrastructure projects, and user-pay scenarios will bring about new opportunities for funding. Expanding advertising, sponsorship, and

"adopt-a-highway" plans to include traffic management will present options for funding operations. Partnerships to sell or share data and video signals will continue to provide new opportunities.⁽⁸⁾

The authority for transportation decision-making is dispersed among several levels, or "tiers", of government, and often between several agencies with each governmental level. The concept of special event management needs to be considered and supported at each of the different tiers noted below:⁽⁹⁾

- The **national** tier involves the authorizing legislation that establishes and provides direction, priorities, and resources for the federal regulations, policies, programs, and research that is initiated or implemented.
- The **regional/statewide tier** involves the appropriate strategic transportation planning, programming, and coordination efforts that include a longer-range time horizon (10 –20 years). Statewide and regional transportation planning is the structured process followed by states, metropolitan planning organizations, municipalities, and operating agencies to design both short and long-term transportation plans. Products are project-oriented, typically providing the Statewide and Regional (Constrained) Long Range Plan (LRP), Statewide Transportation Improvement Program (STIP), regional Transportation Improvement Program (TIP), and Unified Planning Work Program (UPWP). While the process has historically focused on capital projects, it is now recognized that the statewide/regional transportation planning process must take management and operations of the transportation network, and the ITS – based systems that support

operations, into consideration. This is particularly true given that ITS appears to be losing its special funding status that it enjoyed in ISTEA and TEA-21. The current trend to “mainstream” ITS (and operations) into the traditional decision-making process of transportation planning means that operations and ITS deployments will be increasingly funded through regular sources and compared with traditional transportation components, such as road widening and new construction. There is consequently a need to strengthen the ties between management and operations, ITS, and the transportation planning process.

- The **agency tier** is where the infrastructure comprising the surface transportation network (e.g., freeways, bridges, tunnels, streets, rail lines, rolling stock, traffic control/management devices) is typically owned. This level develops a multi-year program and budget that defines resources and commitments for a three to 10 year time frame, with updates every year or two. It is at this tier where priorities, budgets, and allocation of resources are established. From the perspective of freeway management and operations, it is at the agency level where the planning, design and implementation activities for the freeway management program (i.e. special event) take place. It is important that the process to develop the ITS – based strategic plan (or any such focused plan or project) support the overall transportation planning process; not compete with it. Moreover, the end products of these “focused” processes can and should be used to feed information back into the overall transportation planning process.

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CHAPTER FIVE

EVENT OPERATIONS PLANNING



Figure 5-1
Event Planning Team Meeting

PURPOSE

This chapter presents advance planning and stakeholder coordination activities conducted for a specific planned special event. It represents the first of three successive chapters on the event operations planning phase. The primary, interrelated products of the event operations planning phase include: (1) feasibility study, (2) traffic management plan, and (3) travel demand management initiatives. This chapter describes *initial planning activities*, summarizes *feasibility study* analysis steps specific to a planned special event, and highlights *external factors*

affecting the scope of event impact on transportation system operations.

Practitioners can use this chapter as a tool to: (1) establish an event operations planning framework for guiding stakeholder activities throughout the phase, (2) assist in deciding whether to grant or deny preliminary approval to schedule a proposed planned special event based on predicted transportation system impacts and (3) determine traffic and parking demand, roadway capacity deficiencies, and unplanned scenarios that define that scope of traffic management plan required (Chapter 6) in addition to the need for developing travel demand management initiatives (Chapter 7).

INTRODUCTION

This chapter helps practitioners to *hit the ground running* on advance planning for a specific planned special event. Compared to Chapters 6 and 7 which detail strategies and tactics for mitigating the impact of planned special events on transportation system operations, this chapter emphasizes, with supporting example case studies, the importance of facilitating a planning structure, stakeholder coordination, and comprehensive event assessment in generating event planning phase products that completely and accurately guide operations activities on the day-of-event.

A section on initial planning activities describes input data requirements for analyzing the event impact and discusses scenarios linked to particular events that may require the development of a contingency plan(s). The section lists transportation system performance objectives, and associated facility-specific measures of effectiveness (MOEs), that satisfy the customer service requirements of event patrons and other road user classes. It presents an event operations planning schedule and lists various products of the event operations planning phase. The section concludes by examining situations necessitating public involvement, summarizing the feasibility study and traffic management plan review process, and identifying successful policies and agreements for managing and operating a planned special event.

The event feasibility study section presents travel forecast process strategies and considerations for estimating modal split, event-generated traffic demand, and vehicle occupancy factors. It reviews techniques for identifying a market area and directional distribution of event-generated traffic. The section reviews methodologies for identifying and evaluating the sufficiency of available venue parking supply based on event

parking demand and existing conditions. It specifies traffic demand analysis and roadway capacity analysis strategies, including the application of various traffic modeling and capacity analysis tools. To provide a lead-in to the following two chapters on event operations planning, the section describes a toolbox of mitigation strategies for adjusting event traffic generation levels as well as increasing transportation system capacity.

This chapter concludes with an examination of external factors that may create considerable impact on transportation system operations if ignored. A feasibility study may not account for issues such as available resources, weather, concurrent road construction activities, and concurrent planned special events. These factors must be accounted for early in the advance planning process as well as in traffic management plans prepared for a planned special event. For example, given a particular recurring event, event patrons and non-attendee transportation system users may realize satisfactory system operations during one event occurrence, then experience an unacceptable level of service during the next event occurrence. Such incidents occur when stakeholders do not account for various external factors, through scenario-based response plans, early in the event traffic management plan development process.

INITIAL PLANNING ACTIVITIES

Overview

This section examines key planning initiatives and special considerations in order to help guide the user through the first steps of the event operations planning phase. The event operations planning phase begins with stakeholders establishing a planning frame-

work and schedule. The framework includes forming an event planning team, creating agreements, identifying performance goals and objectives, and deciding on mitigation assessment and approval protocol.

Special considerations evolve from reviewing the event operations characteristics of a particular special event (e.g., risk assessment) in addition to past successes and lessons learned. These considerations weigh heavy on traffic management plan requirements, and stakeholders must address issues affecting community residents and businesses through public outreach efforts early in the planning phase in order to ensure proper mitigation and non-conflict with traffic management plan specifications.

Stakeholder Roles and Coordination

The event planning team handles tasks associated with *event-specific operations planning* and *traffic management plan implementation*. Table 5-1 lists the primary responsibilities of the event planning team under the event operations planning phase. The event planning team consists of a diverse group of stakeholders with either event operations or community interest as their primary concern. The success of the event planning team depends on achieving strong coordination among participating team stakeholders.

Table 5-1
 Event Planning Team Responsibilities
 During the Event Operations Planning Phase

RESPONSIBILITY
<ul style="list-style-type: none"> • Perform feasibility study. • Develop traffic management plan. • Evaluate travel demand management initiatives.

Event Planning Team Establishment

An event planning team forms as a result of either: (1) coordination among traffic operations agencies, transit agencies, law enforcement agencies, and event organizers that represent the core event planning team stakeholders or (2) designation by a committee on special events within a regional transportation management organization, such as a traffic incident management program.

- The former typically describes event planning teams formed in response to local planned special events affecting few jurisdictions, such as events occurring in rural or urban areas.
- The latter may occur in metropolitan areas where planned special events happen frequently, thus warranting an *on-call* event planning team.

A *regional transportation committee on special events* features stakeholders that have achieved interagency coordination through past, cooperative travel management efforts.

- Stakeholder representatives have first-hand knowledge of the roles, resources, and capabilities of each committee participant.
- Stakeholders commonly include traffic operations agencies, law enforcement, transit agencies, event organizers or venue operators, and the media.
- Committees in metropolitan areas may create task forces for specific planned special event venues or recurring planned special events (e.g., annual fairs, fireworks displays, parades, etc.). The committee or task force generally meets and performs event operations planning tasks on an as-needed basis. The group may also convene regularly (e.g., weekly, monthly, or quarterly) to review

program planning efforts for future planned special events.

Prior to initiating the event operations planning process, the core event planning team should adopt a mission, or purpose, and solicit buy-in from public agency stakeholders, the community, and other event support stakeholders. In identifying pertinent jurisdictions, the event planning team may consider contacting stakeholders within a certain distance (e.g., five miles) of the event venue. The event planning team can obtain buy-in from community interest stakeholders more easily when a core group of stakeholders already exists, including public agencies. Elected officials and the public

can serve as advocates for the event planning team; therefore, participation from these stakeholders should occur early in the event operations planning phase.

Table 5-2 indicates the typical function of each participating stakeholder in generating the primary products of the event operations planning phase. A list of stakeholders is referenced to the three products produced: (1) feasibility study, (2) traffic management plan, and (3) travel demand management. Stakeholders contribute data, communicate needs, and/or furnish resources. Often, certain agencies promote initiatives developed by the event planning team, such as travel demand management strategies.

Table 5-2
Stakeholder Participation in Event Operations Planning

STAKEHOLDER	PRODUCTS OF THE EVENT PLANNING TEAM									
	FEASIBILITY STUDY			TRAFFIC MANAGEMENT PLAN			TRAVEL DEMAND MANAGEMENT			
	INPUT	DEVELOP	REVIEW	INPUT	DEVELOP	REVIEW	INPUT	DEVELOP	REVIEW	PROMOTE
Traffic Operations Agency	•	•	•	•	•	•	•	•	•	•
Law Enforcement				•	•	•				
Event Organizer	•			•	•			•		•
Fire and EMS				•	•	•				
Elected Official			•	•		•			•	•
Transit Agency	•			•	•		•	•		•
Public			•	•		•	•		•	
Private Transportation Consultant		•		•	•		•	•		
Private Traffic Control Contractor				•						
Media										•
Office on Special Events			•			•				
Emergency Management Agency				•		•				
Regional Organization			•			•	•	•	•	•

Interagency Coordination

In establishing an event planning team, the core stakeholders must develop a working trust with each other. This trust results when stakeholders realize that a planned special event necessitates the same relationships cultivated in daily traffic and incident management.

A joint operations policy or other memoranda of understanding strengthens the cooperative bond among core stakeholders. These agreements identify common goals and responsibilities of the partnering agencies.

Consensus among stakeholders builds interagency coordination and an understanding of each agency's responsibility. Key elements to consider include:

- Participating stakeholders must recognize that the motivations of individual agencies may differ from the event planning team's concerns as a result of their day-to-day responsibilities.
- Although the event planning team does not have authority over individual stakeholders, the planning team must realize that possible conflicts may exist between the team's objectives and a stakeholder's primary responsibility. Understanding this is key to overcoming such a problem; yet, the team can foster a cooperative spirit among stakeholders by emphasizing that participants *own* a part of the event planning team's common goals. In turn, team goals and objectives create incentives for individual stakeholders.
- Stakeholders must remain focused on the goals and objectives of the event planning team in order to effectively support and contribute in the event operations planning process. This includes concen-

trating on tasks that can be successfully accomplished collectively.

Common barriers to the event planning team's progress include *resource constraints* and *jurisdictional barriers*.

- Resource or funding constraints surface when stakeholders assign a lower priority to the planned special event. In satisfying individual and team goals, stakeholders may have to make temporary project and program sacrifices, in terms of personnel and equipment reassignment, to provide adequate benefits to the event operations planning effort.
- Jurisdictional barriers arise when two or more stakeholders are unclear on their duties and responsibilities. Do not allow participating agencies to feel left out. At the time of buy-in, the event planning team must indicate which stakeholders are required on an as-needed basis. The team must have the ability to communicate effectively with stakeholders having a peripheral involvement in the overall planning effort.

Risk Assessment

Based on the type and purpose of a planned special event, there exists potential scenarios where event patron or non-attendee behavior may cause overcrowded conditions in the vicinity of an event venue and/or create unplanned road closures. The event planning team must assess the nature of a proposed event and determine the need to incorporate special contingency plans in response to potentially dangerous situations that will interfere with the planned travel management on the day-of-event.

Table 5-3 lists four notable event-oriented risk scenarios associated with some planned special events. This section further

Table 5-3
Summary of Event-Oriented Risk Scenarios

EVENT-ORIENTED RISK	EXAMPLE SCENARIO
Demonstration or protest	<ul style="list-style-type: none"> • Any event that is political in nature or invokes social concern. • Political conventions and parades
Ticketless event patrons causing overcrowding	<ul style="list-style-type: none"> • Sold-out sports championship games • Sold-out concerts involving select performers
Fan celebration	<ul style="list-style-type: none"> • Response to city or school sports team winning a championship.
Event patron violence	<ul style="list-style-type: none"> • Motorcycle rally violence between patrons and/or participants.

describes these scenarios and highlights example case studies that illustrate resulting impacts on advance planning and/or day-of-event operations. Chapter 6 provides detailed guidance on contingency planning in addition to the development of specific strategies (e.g., alternate route plans) needed to effectively respond to certain unplanned scenarios.

Demonstration or Protest

Certain political or socially controversial planned special events may provoke a demonstration or protest. Those attending the demonstration represent non-attendees, and the event planning team often has little or no advance information regarding the demonstration's specific location and time of occurrence. The event planning team should obtain access to relevant law enforcement intelligence reports regarding potential demonstrations to develop an effective travel management contingency plan. The threat of an unplanned road closure should prompt the event planning team to consider developing an alternate route contingency plan detailing the personnel and equipment resources necessary to effect an immediate diversion of traffic.

Appendix B contains a contingency diversion routing plan prepared in response to the potential for demonstrations during the 2000 Republican National Convention in Philadelphia, PA.

Overcrowding

The occurrence of sports championship games or major concerts at venues having a defined *sell-out* capacity may attract *ticketless* event patrons not accounted for in event travel forecasts and impact mitigation strategies. Events such as the Super Bowl or National Collegiate Athletic Association (NCAA) Final Four cause an increase in area visitors beyond the actual event participants and patrons. Sold-out music festivals may attract persons wanting to tailgate in venue parking areas despite not having a ticket.

For instance, event planners originally anticipated 200,000 people to attend a two-day *Grateful Dead* reunion concert at a 35,000 seat amphitheater in rural East Troy, WI, located approximately 30 miles southeast of Milwaukee. The Walworth County Highway Committee initially denied the event organizer a permit to hold the two concerts. After the event organizer unveiled a comprehensive security and traffic management plan that included using advance checkpoints to turn away any vehicle that contained a ticketless occupant, county executives overturned their decision and issued a permit.⁽¹⁾ Appendix B contains a list of restrictions imposed by the event organizer and event planning team to prevent ticketless event patrons from gaining access to the venue parking areas.

Fan Celebration

Another severe impact risk associated with sports championship games involves fan celebrations that occur when a city sports team wins a championship at home. In this case, the traffic management team charged with managing travel during event egress must also mitigate traffic impacts caused by non-attendees converging on the venue site and unruly fans disrupting traffic and pedestrian flow.

For instance, the Detroit Red Wings won the 2002 Stanley Cup in Detroit. Operating from past experience, the Michigan State Police began closing portions of Interstate 75 and the Lodge Freeway (State Route 10) leading to downtown Detroit and the event venue. This contingency plan went into effect at the start of the final period of play with Detroit leading the championship clinching game.⁽²⁾ Contingency plan details were even posted in advance on Red Wings' fan websites. Located approximately 16 miles north of the event venue, Royal Oak police and city officials maintained road closure contingency plans to accommodate the thousands of fans that went to the popular clubs and bars to celebrate the home team win.⁽³⁾

Event Patron Violence

An outbreak of violence among event patrons warrants special security precautions to contain and capture potential suspects. Law enforcement may initiate a road closure as a first response to discourage people from entering and leaving the region where the violence took place.

During the 2002 Laughlin, NV River Run motorcycle rally, attended by tens of thousands of motorcycle enthusiasts, a multiple homicide occurred after a clash between rival motorcycle gangs. In an effort to cap-

ture the homicide suspects, Nevada officials closed all highways and arterials serving Laughlin, including Nevada State Route 163 at the Nevada/Arizona border as shown in Figure 5-2. Trucks traveling U.S. 93, a North American Free Trade Agreement (NAFTA) designated trucking corridor, traverse State Route 163 because of prohibitions on crossing the Hoover Dam. Law enforcement maintained the road closures for a few hours.⁽⁴⁾ A possible traffic management contingency plan prepared in advance of the described security incident would specify a regional alternate route plan coupled with regional traveler information.



Figure 5-2
Nevada State Route 168 Closure During Motorcycle Rally (Photo courtesy of the Laughlin Free Press)

Performance Goals and Objectives

The goals of managing travel for planned special events include *achieving predictability, ensuring safety, and maximizing efficiency*. Table 5-4 states performance objectives, for the previously defined classes of transportation system users, applicable to satisfying the overall goal of operations efficiency and safety. In meeting these performance objectives, the event planning team must target the goal of achieving predictability during the event operations planning phase. Table 5-5 presents common, easy-to-measure measures of effectiveness for assessing the performance

Table 5-4
Transportation System Operations Performance Objectives for Planned Special Events

USER CLASS	PERFORMANCE OBJECTIVE
Event patron	<ul style="list-style-type: none"> • Minimize travel delay to/from the event. • Minimize conflicts between pedestrians and vehicles. • Minimize travel safety hazards. • Minimize impact of traffic incidents. • Disseminate accurate, timely, and consistent traveler information. • Increase automation of traffic control. • Maximize site access service flow rates.
Non-attende road user	<ul style="list-style-type: none"> • Minimize travel delay on major thoroughfares, freeways and major arterials. • Minimize impact on commuter and trucker travel time reliability. • Maintain required parking and access for local residents and businesses. • Maintain unimpeded access for emergency vehicles.
Transit user	<ul style="list-style-type: none"> • Maintain scheduled travel times. • Minimize transit bus dwell times. • Maintain required transit station parking for non-attende transit users.

objectives that describe traffic operations. The event planning team should consider field studies to quantify existing MOEs at key roadways and intersections to calibrate capacity analysis software and computer simulation models applied during traffic management plan development. The identified MOEs represent day-of-event performance evaluation data, useful for: (1) making real-time adjustments to the traffic management plan on the day-of-event, (2) conducting a post-event evaluation of transportation system performance, and (3) referencing during advance planning for future event occurrences.

NCHRP Synthesis 311, *Performance Measures of Operational Effectiveness for Highway Segments and Systems*, reports on the state-of-the-practice of using performance measures for the monitoring and operational management of highway segments and systems.⁽⁵⁾ It assesses the relative strengths and weaknesses of various performance measures. Based on a survey of current agency practice, the synthesis reports that performance measures associated with planned special event management are similar to traffic and incident management, but may also include performance measures related to

clearance times (e.g., time for vehicles to clear a venue site area) and parking management measures.

Table 5-5
Measures of Effectiveness for Assessing Performance Objectives

LOCATION	MEASURE OF EFFECTIVENESS
Venue parking areas	<ul style="list-style-type: none"> • Occupancy and turnover rate • Arrival and departure service rate • Time to clear parking lots
Intersections	<ul style="list-style-type: none"> • Vehicle delay • Queue length
Freeways and streets	<ul style="list-style-type: none"> • Travel time and delay • Traffic volume to capacity ratio • Traffic speed • Number and location of crashes and other incidents • Traffic incident clearance time

Planning Schedule and Deliverables

Two deliverables, produced by the event planning team during the event operations planning phase, include the *feasibility study* and the *traffic management plan*, designed to mitigate impacts identified in the feasibility study. *Travel demand management* represents a key component of the overall

process when forecasted traffic demand levels approach or exceed available roadway capacity.

The previous chapter outlined a detailed special event permit process and identified advance planning deadlines applicable to the event organizer. In turn, Figure 5-3 illustrates a high-level event operations planning schedule for an event planning stakeholder group. The figure lists advance planning activities and potential stakeholder meetings and public hearings in a timeline relative to the planning deliverables. The schedule indicates other stakeholder planning initiatives, such as the development of a special-

ized transit plan to reduce event traffic demand.

The event planning team should:

- Obtain a completed special event permit application and commence work on the event feasibility study no later than 60 days prior to the event.
- Start developing the event traffic management plan and obtain all initial public input and recommendations no later than 30 days before the event.
- Set aside the final 14 days prior to the event for implementation activities in addition to event information dissemination.

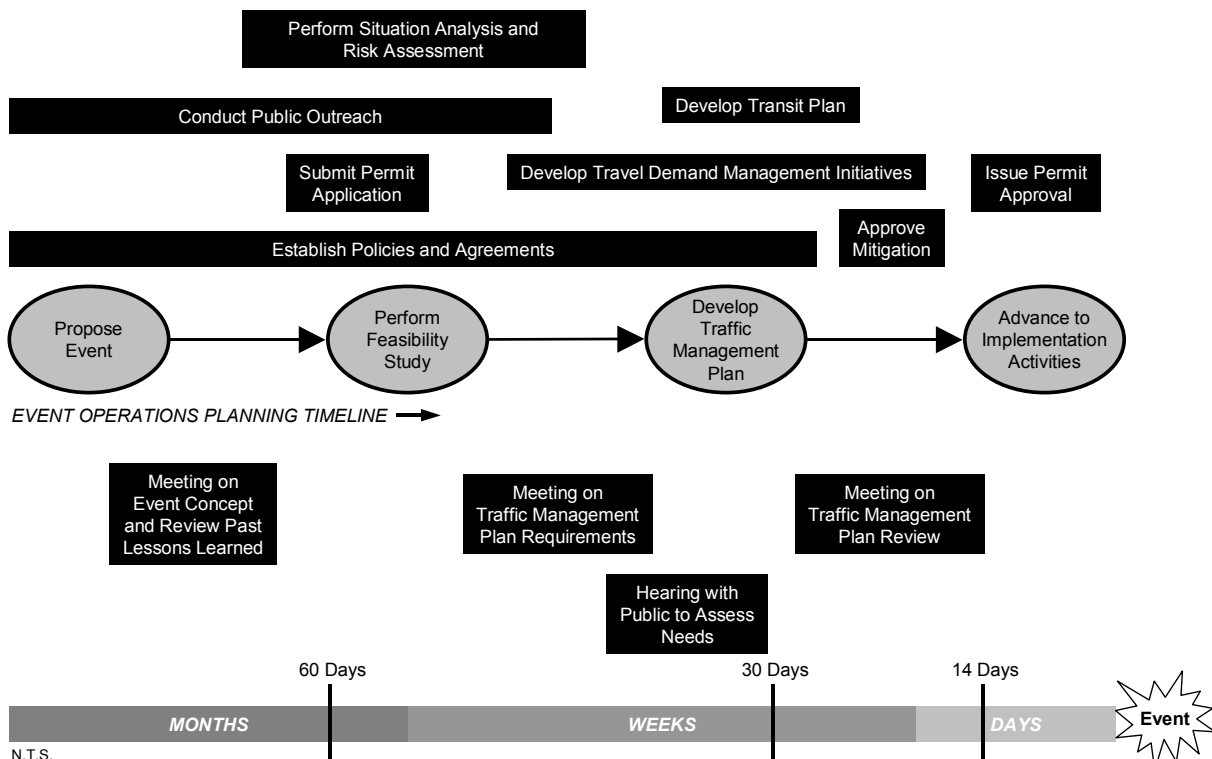


Figure 5-3
Event Operations Planning Schedule

The planning schedule provides a generic timeline, recognizing that actual event operations planning schedules vary considerably. For instance, some major, roving planned special events, such as the U.S. Golf Open, require an event operations planning phase spanning more than one year.

Public Outreach

Planned special events that may impact adjacent neighborhoods and businesses usually require public involvement to address related concerns. The public represents individual residents, businesses, and associated community groups. Public outreach activities initiated early in the event operations planning phase can reveal important issues that local residents and businesses may have. Soliciting these concerns through public involvement, and addressing the issues in the planning process, can improve relations and day-of-event operations.

Street use events or other planned special events that take place at venues located adjacent to residential and/or commercial districts may significantly impact non-attendee mobility and community quality of life. Specific neighborhood impact issues include heavy traffic demand on local streets and event patron use of available local on-street parking. These issues arise because, in some instances, event patrons may find on-street parking in residential neighborhoods and business districts affords more convenient ingress and egress. In addition, illegal parking fines may not exceed, or significantly exceed, the fee charged at designated venue parking areas.

Initiation of public outreach efforts includes stakeholders, such as a traffic operations agency or law enforcement, holding initial

and regular meetings with community groups and local elected officials. At these meetings, the event planning team should present the scope of the event in enough detail to solicit quality input and buy-in from public stakeholders. Concerns revealed in this process should be addressed, and feasible solutions presented, so that the public stakeholders feel assured that impacts will be mitigated to their satisfaction.

The event planning team and public stakeholders should identify potential problems prior to the development of the traffic management plan. These problems can be identified by first understanding the event scope with consideration given to current neighborhood traffic and parking restrictions, traffic management plans deployed during past planned special events, and identified problems experienced during past events. With this information, the public stakeholders can make informed decisions and provide valuable input to the event planning team.

Example Case Studies

Innovative strategies developed by the cities of Seattle and Chicago to minimize neighborhood traffic and parking impacts during discrete/recurring events at a permanent venue are highlighted in three case studies summarized below. It should be recognized that an event planning team can implement these strategies on a temporary basis for less frequent continuous events and street use events.

Case Study One: University of Washington. Due to the construction of a new football stadium, the Seattle Seahawks moved their scheduled 2000 and 2001 home games to the University of Washington's Husky Stadium. Recognizing the Seahawks represented a

new and different stadium user with unique characteristics, the City of Seattle required development of a Seahawk Football Transportation Management Program.⁽⁶⁾

Key strategies included:

- The City of Seattle DOT, Seahawks organization, University of Washington, neighboring residents, and other City of Seattle officials conducted formal meetings prior to and during the Seahawks football season to listen to community concerns, report on operations, develop plan modifications, and review performance goal achievement.
- A hotline was established for local residents to voice concerns and to communicate day-of-event observations.
- Stakeholders responded by developing carpool parking pricing incentives and establishing new *restricted parking zones (RPZ)* in residential neighborhoods adjacent to Husky Stadium.
- The number of parking enforcement officers assigned to patrol the RPZs on the day-of-event increased from 6 to 13, and the Seattle Municipal Court approved an RPZ violation fine increase from \$28 to \$44 (although a \$71 fine was initially proposed).
- Table 5-6 notes specific performance goals established by the event planning team to evaluate roadway system per-

formance objectives for the 2000 Seattle Seahawks football season.

Case Study Two: Safeco Field in Seattle, WA. Safeco Field, home to baseball’s Seattle Mariners, was constructed in 1999 and borders three neighborhoods. Recognizing the residential and business needs of these neighborhoods, the City of Seattle developed an Inaugural Season Transportation Management Program (TMP) for events at the stadium venue.⁽⁷⁾

Key strategies included:

- Participating stakeholders set the following TMP goal: *The primary goal, first and foremost, is reducing the number of vehicles, drive-alone and otherwise, associated with game attendance, thereby deflecting the traffic and parking impacts from the adjacent destination neighborhoods and the regional transportation system as a whole. The goals, which are stepped according to the kinds of and anticipated attendance, are expressed in vehicles per thousand attendees.*
- The Mariners organization, City staff, and the public formed the event planning team charged with developing the TMP.

Table 5-6
 Seahawk Football Transportation Management Program Goals and Objectives⁽⁶⁾

GOAL	MEASURE	MEASURED PERFORMANCE	GOAL MET?
Travel reduction	No more than 195 cars/1000 attendees	182 cars/1000 attendees	Yes
Travel time	Within 5% of Husky game travel times	-0.1% to 4.7% different than for Husky games	Yes
Duration of post-game traffic	Equal to or less than after Husky games	35 minutes less	Yes

- The stakeholders focused on meeting numerous performance-based traffic demand mitigation requirements, varying by type of event and attendance levels, set by the Seattle City Council upon issuing a stadium master use permit.
- First year operation performance goals for Mariner’s baseball games ranged from 330 (sell-out) to 345 vehicles per 1000 attendees. The permit specified third year operation and beyond performance goals ranging from 275 (sell-out) to 325 vehicles per 1000 attendees.
- A top priority for the TMP concerned deflecting special event parking impacts on the surrounding neighborhoods to the Seattle Central Business District.
- Table 5-7 lists specific measures considered by City officials to minimize on-

street parking by event patrons in adjacent neighborhoods.

Case Study Three: U.S. Cellular Field in Chicago, IL. The City of Chicago DOT maintains a *Resident Parking Permit Program* to preserve legal on-street parking for residents of neighborhoods surrounding U.S. Cellular Field during all Chicago White Sox baseball games.⁽⁸⁾

Key elements of the Resident Parking Permit Program include:

- For residents living within the program area, the City issues one resident parking permit per registered vehicle in addition to one guest permit per resident.

Table 5-7
Measures Considered in Developing a Neighborhood Parking Management Plan for Seattle’s Safeco Field⁽⁷⁾

PARKING MANAGEMENT OPTION
<ul style="list-style-type: none"> • Extend parking meter enforcement hours (until at least 10 p.m. and on Sundays). • Replace existing meters with smart meters (programmable by season, allowing extended hours during baseball season, for instance). • Impose time limits on parking after 6 p.m. with signs (rather than extend meter hours, place 2 hour limits on metered spaces after 6 p.m. and on Sundays). • Impose time limits on parking after 6 p.m. with meter hoods. • Enforce parking restrictions 7 days per week (8 a.m. to 6 p.m. on Sundays). • Add new parking meters. • Reduce parking meter duration limits (change some 2 hour meters to 1 hour or less). • Replace 4 hour and unrestricted spaces with 2-hour spaces. • Refine role of City’s enforcement officers (add community/public relations function). • Assess higher fines for parking infractions in the ballpark neighborhoods. • Increase enforcement (additional parking enforcement officers on game days; multiple ticketing). • Create residential parking zones. • Increase number and/or size of loading zones. • Create business parking zones. • Discontinue access restrictions that temporarily remove on-street parking (before and after events). • Discontinue parking prohibitions for stadium access (before, during, and after events). • Parking space delineation in non-metered areas.

- The City also makes available guest parking permits for area businesses and churches to allow customers and congregation members to park in legal on-street parking spaces and gain access to off-street business/church parking within the program area.
- Figure 5-4 shows a sign enforcing the Resident Parking Permit Program.
- The City has a similar permit program in place for neighborhoods surrounding Wrigley Field, home to baseball’s Chicago Cubs.



Figure 5-4
Chicago Resident Permit Parking Program Enforcement

Stakeholder Review of Planning Products

The previous chapter summarized various criteria for planned special event permit approval. However, as indicated in Figure 5-3, the event operations planning phase includes intermediate and final review periods for the event feasibility study and traffic management plan.

Stakeholder review concentrates on the identification and proposed mitigation of

event travel impacts. Effective and rapid stakeholder review of event operations planning products requires: (1) an annotated planning timeline, (2) a review process, and (3) performance standards.

Annotated Planning Timeline

In cases where an event planning team collectively develops a feasibility study, traffic management plan, and associated mitigation strategies, an annotated planning timeline proves effective for monitoring team progress.

The Wisconsin DOT found such a tool useful for tracking specific traffic management planning and infrastructure deployment activities required to prepare for the opening of Miller Park in Milwaukee. The agency maintained a responsibility matrix listing each action item, the stakeholder responsible, the due date, and the present deployment status. An event planning team should establish an annotated planning timeline early in the event operations planning phase and use the tool to guide subsequent team meeting agendas as stakeholders develop event impact mitigation strategies and tactics.

Review Process

Adopting a formal review process reduces unnecessary delay in producing event operations planning deliverables required to stage a planned special event. Key aspects to be considered include:

- The review process should feature the oversight team monitoring and reviewing plans developed by the event planning team.
- The oversight team typically consists of mid-to-upper level representatives of

transportation agencies and law enforcement in addition to elected officials and ranking officials of other public agencies.

- A regional organization may assume the duties of an oversight team.
- Under a formal review process, an event planning team may seek oversight team approval of a feasibility study scope or conceptual traffic management plan prior to commencing work on the final deliverable. Both stakeholder groups interact again to review feasibility study results and final traffic management operations plans.
- Some jurisdictions have a *champion* charged with resolving institutional and operations issues affecting travel management for planned special events. These champions have the position to mitigate issues hampering the event operations planning process. Therefore, they should administer the review process.
- Jurisdictions should have an alternate official ready to replace the current champion should that person resign from present duty.

Performance Standards

This chapter included a review of various transportation system operations performance objectives and associated measures of effectiveness that stakeholders may use to monitor system performance on the day-of-event and, in turn, evaluate travel management efforts. During the event operations planning phase, stakeholders must set and agree to performance standards used to assess traffic impact mitigation proposals. These performance standards typically represent level of service (LOS) measures applicable to freeway and street segments, freeway junctions, and roadway intersections. Stakeholders assigned to develop

mitigation strategies or review planned special event impacts on traffic should reference jurisdiction Traffic Impact Study guidelines defining accepted LOS thresholds. The LOS thresholds likely vary by roadway classification. In urban and metropolitan areas, jurisdictions may deem an LOS D, describing *high-density stable flow*, acceptable for freeways, arterials, and major intersections. Similarly, an LOS C, describing *stable flow*, may represent the allowable threshold for local streets and intersections. Small urban and rural areas may have more stringent requirements. Jurisdictions may relax their performance standards and allow LOS E operation, describing *unstable capacity flow*, on major roadway facilities for infrequent planned special events.

Policies and Agreements

The establishment of special policies and agreements to support planning and day-of-event management of planned special events facilitates efficient stakeholder collaboration and defines important event support stakeholder services that may be incorporated into a traffic management plan for a particular planned special event. These initiatives improve interagency relationships, clarify decision-making responsibilities and expectations, and secure on-call services and agency actions. For instance, a particular policy or agreement may intuitively support a contingency response plan to mitigate unanticipated congestion delay on the day-of-event. Stakeholders may develop policies and agreements specific to a particular planned special event or for all planned special events in a region. Because of the potential significant time to develop and approve a particular policy or agreement, stakeholders should establish these initiatives early in the event operations planning phase or during the program planning phase.

Table 5-8 summarizes four types of policies and agreements involving stakeholders responsible for event operations planning and/or day-of-event operations.

Interagency Agreement

Interagency agreements include a joint operations policy, memorandum of understanding, or mutual-aid agreement between two or more stakeholders. Table 5-9 lists components of interagency agreements. Appendix C contains an Illinois and Washington State joint operations policy, between state DOT and state police, that covers special event planning.^(9,10) Stakeholders may also strike an interagency agreement, during the event operations planning phase, applicable to a specific planned special event.

Standard Street Use Event Routes

The development and use of standard street use event routes reduces the level and complexity of event operations planning tasks and overall planning time. In establishing such standard routes for parades and/or street races, stakeholders simplify planning tasks, thus creating a more efficient event operations planning process. The routes specify appropriate event starting and ending points coupled with staging areas for participant assembly and disbanding.

Use of a standard street use event route offers the following advantages:

- Allows reuse of traffic management and operations plans, with minor modifications as necessary.
- Realizes a cost savings for stakeholders.
- Allows for the development of standard signs, specific to the event route and associated alternate routes for background traffic, that may be reused for future street use events.
- Allows event patrons and non-attendee road users to become familiar with traffic patterns during recurring street use events, thus minimizing potential traffic problems on the day-of-event.

Toll Facility Congestion Policy

Suspension of toll collections on turnpikes and other toll facilities during periods of heavy congestion represents a new policy concept aimed at reducing congestion and the occurrence of traffic incidents at toll plazas. A toll facility congestion policy represents a congestion mitigation strategy applicable to planned special events. Both West Virginia and Maryland have experience with this policy:

Table 5-8
 Summary of Policies and Agreements Applicable to Managing Planned Special Events

ITEM	EXAMPLE APPLICATION
Interagency agreement	<ul style="list-style-type: none"> • Joint operations policy between stakeholders that establishes a shared role regarding event operations planning and day-of-event travel management. • Memorandum of understanding defining stakeholder roles and responsibilities. • Mutual-aid agreement facilitating resource sharing and/or reimbursement for services.
Standard street use event routes	<ul style="list-style-type: none"> • Routes established under the program planning phase for recurring street use events such as parades and races.
Toll facility congestion policy	<ul style="list-style-type: none"> • Suspension of tolls during periods of heavy congestion.
Public-private towing agreement	<ul style="list-style-type: none"> • On-call towing and recovery services during a special event.

Table 5-9
Components of Interagency Agreements

COMPONENT
<ul style="list-style-type: none"> • Advance planning duties and responsibilities • Day-of-event duties and responsibilities • Organization • Resource sharing • Funding reimbursement mechanisms

- A West Virginia Turnpike policy, enacted in December 2002, allows Turnpike officials to open toll plazas for 15 minutes any time vehicle queues extend at least three miles upstream of the plaza. After the 15-minute period ends, officials can determine whether the queue dispersed or if another 15-minute period is required. Under normal operations, Turnpike officials estimate that a vehicle joining a three-mile queue takes approximately 15 minutes to pass through a toll plaza. Officials noted 15 minor crashes occurred on the Sunday after Thanksgiving in 2002, the Turnpike’s busiest day of the year.⁽¹¹⁾
- State legislators in Maryland debated a proposed bill in 2003 to create a similar policy for the Chesapeake Bay Bridge.⁽¹²⁾ The bill specifies suspending tolls if a traffic queue extends more than five miles upstream of the toll plaza and is moving at less than 30 miles per hour. The increasing deployment of electronic tolling may obviate the need for these strategies in the future.

Public-Private Towing Agreement

Private towing companies perform a specific functional activity in traffic incident management, that is, removal of disabled or wrecked vehicles, spilled cargo, and debris from an incident site. Law enforcement and traffic operations agencies alike have recognized the indispensable role private towing companies have in effecting incident re-

moval and restoring the affected road section back to normal operation. Public agencies commonly enter into agreements with one or more commercial towing companies to secure on-call traffic incident clearance services, or at a minimum, the agencies maintain a contact list of local private towing companies.

Traffic incident management represents a key consideration in event operations planning. Event planning team stakeholders may establish event-specific public-private towing agreements to secure *on-site* towing and recovery services. For instance, the City of Cincinnati has established, under the City rules and regulations for police rotation wreckers, a *special event tow* category.⁽¹³⁾ The City defines a special event tow as “when tow operator remains with police officer for a specified period of time towing or moving vehicles as need arises.” The City regulation specifies a special event tow rate of \$20.00 per tow or \$35.00 per hour, whichever is greater.

FEASIBILITY STUDY



Overview

The structure and approach of a planned special event feasibility study resembles a *Traffic Impact Study* required for planned developments, as illustrated in Figure 5-5. The figure shows the sequential steps in preparing a feasibility study for a planned special event.

Table 5-10 provides an overview of the first five feasibility study components. The accuracy of one analysis influences that of another. *Achieving predictability*, a goal of managing travel for planned special events, represents the focus of a feasibility study effort.

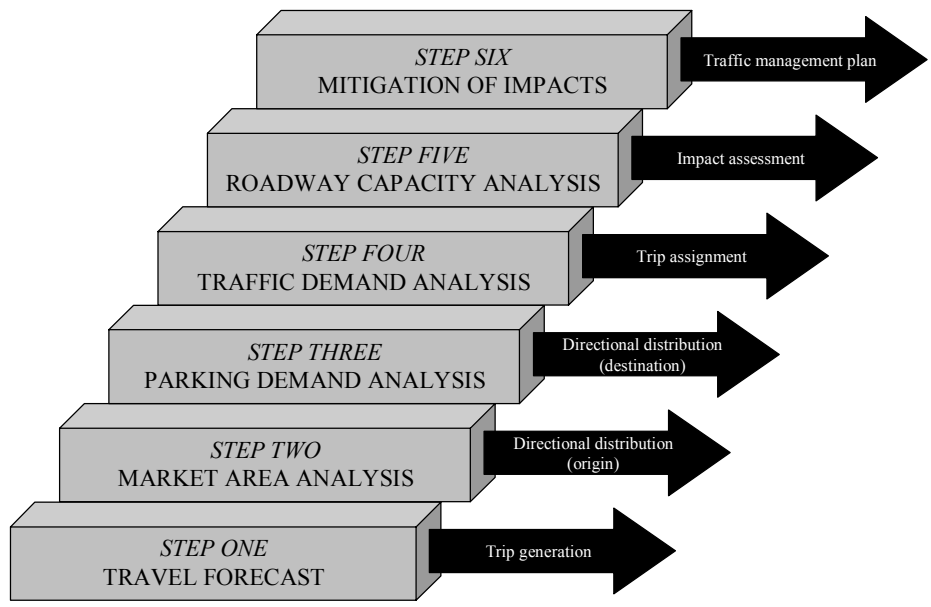


Figure 5-5
Feasibility Study Analysis Steps

Table 5-10
Feasibility Study Analysis Summary

COMPONENT	ANALYSIS	RESULT	APPLICATION
Travel forecast	• Modal split	• Number of trips by mode of travel	<ul style="list-style-type: none"> • Input into parking demand analysis. • Input into traffic demand analysis.
	• Event traffic generation	• Number of vehicle trips by personal automobile	
	• Traffic arrival rate	• Number of trips per unit of time	
Market area analysis	• Event trip origin	• Geographic location of event trip origins and percent split	• Input into traffic demand analysis.
Parking demand analysis	• Background parking occupancy	• Number of non-attendee vehicles per parking area and unit of time	• Input into event parking occupancy.
	• Event parking demand	• Number of event-generated vehicles per parking area and unit of time	• Input into traffic demand analysis.
Traffic demand analysis	• Background traffic flow	• Background traffic demand rate, adjusted for event-required road closures	• Input into roadway capacity analysis.
	• Event traffic assignment	• Event traffic demand rate per assigned route	
Roadway capacity analysis	• Section and point capacity	• Identification of capacity constraints and level of service	<ul style="list-style-type: none"> • Input into traffic management plan. • Input into travel demand management assessment.
	• Network operations	• Identification of bottleneck locations and saturation flow rates	

The feasibility study gauges the impact a proposed event has on traffic and parking operations in the vicinity of the venue. It determines if a particular planned special event will cause travel problems, where and when the problems will occur, and the magnitude of each identified problem using various MOEs. Initially, the study is conducted *without* roadway capacity improvements or initiatives to reduce travel demand. Once the feasibility study identifies event travel problems, practitioners can take steps to mitigate transportation system deficiencies. These results define the scope of the traffic management plan required to successfully manage travel for a planned special event.

Data Requirements

Feasibility study input data requirements reflect measures of the three core factors that determine the impact of the event: *travel demand*, *road/site capacity*, and *event operation*. Table 5-11 summarizes various types of input data to consider in a feasibility study. This includes *transportation system infrastructure*, *background traffic*, and *area* data and information. With the assistance of other event planning team stakeholders most data types are accessible.

Travel demand data is used to develop the event travel forecast and to determine the event area of impact. Background traffic data describes the scope of available roadway and parking capacity for event patron traffic. Information regarding the venue area assists in identifying possible event patron trip origins. For example, a venue located in a downtown area may attract a significant number of patrons arriving from work, thus possibly reducing the number of transit or vehicular trips generated. Events having a regional or greater scope may involve a significant number of patrons stay-

ing at area hotels. To increase travel forecast accuracy and meet the goal of *achieving predictability*, practitioners should research appropriate historical data.

The identification and quantification of site and transportation system capacity involves performing a full inventory of the transportation system infrastructure serving the event venue. This includes obtaining data on roadway geometrics and associated regulations (e.g., speed limits and travel restrictions). An inventory of freeway facilities should include the capacity of such freeway components as ramp junctions and weaving sections. In addition, street traffic control devices and signal timing plans must be identified and saturation flow rates determined.

Event operation characteristics impact both travel *demand* and available *capacity*. The knowledge of certain event logistics, combined with available historical data, can help predict the rate of event patron arrivals and departures over time. Practitioners, in tandem with the event organizer, must also identify the scope of road closures and parking area needed just to stage the event (e.g., parade/race route, hospitality areas, etc.). This does not include the roadway capacity and parking needed to accommodate event patron traffic.

Travel Forecast

Travel forecast analysis involves estimating: (1) modal split, (2) event traffic generation, and (3) traffic arrival rate. Event planning team stakeholders that typically collaborate on this analysis include a traffic operations agency, traffic engineering consultant, transit agency, and event organizer. The event organizer supplies key input data regarding event operation. The transit agency assists

Table 5-11
Feasibility Study Data Requirements

FACTOR	INPUT DATA	DESCRIPTION
Travel Demand	<ul style="list-style-type: none"> Event patron traffic 	<ul style="list-style-type: none"> Daily attendance Event patron demographics (e.g., advance/season ticket holder place of residence or zip code) Admission (general/reserved seating and free/cost) Venue attendance capacity Acceptable walking times (e.g., to determine available parking areas and percent walking trips)
	<ul style="list-style-type: none"> Background traffic 	<ul style="list-style-type: none"> Hourly traffic volumes Existing parking occupancy Vehicle classification
	<ul style="list-style-type: none"> Venue area 	<ul style="list-style-type: none"> Employment centers in venue vicinity (e.g., number of jobs) Hotels in venue vicinity
	<ul style="list-style-type: none"> Historical data (similar events) 	<ul style="list-style-type: none"> Attendance (e.g., trip generation rate) Hourly traffic volumes Parking demand (e.g., parking demand rate) Vehicle occupancy Hourly/sub-hourly event patron arrival and departure distribution Modal split Patron survey (e.g., demographics and travel)
Road/Site Capacity	<ul style="list-style-type: none"> Roadway facilities 	<ul style="list-style-type: none"> Existing, areawide roadway network <ul style="list-style-type: none"> Freeway and arterial corridors Local street facilities connecting corridors and the venue site Location and capacity of site access points Pedestrian (e.g., sidewalks and crossings) and bicycle accommodation Geometrics, regulations, and lane assignments Traffic control devices and traffic signal programming data Toll plazas (freeway or bridge/tunnel) in venue vicinity
	<ul style="list-style-type: none"> Parking availability 	<ul style="list-style-type: none"> Location and capacity of site access points Location and capacity of off-street venue parking areas (free and paid) Location and capacity of permitted on-street parking areas Location and capacity of overflow parking areas
	<ul style="list-style-type: none"> Transit availability 	<ul style="list-style-type: none"> Number and location of transit stations serving venue (e.g., public transportation – bus and rail) Scope of transit services at identified stations (e.g., schedule and capacity) Origin and scope of established express and charter bus service to venue (e.g., scheduled bus service from park and ride lots for special events only) Base transit spilt (e.g., without incentive or promotion)
Event Operation	<ul style="list-style-type: none"> Event logistics 	<ul style="list-style-type: none"> Venue location Event hours of operation Site opening and closing times Participant accommodation (e.g., arrive by bus, stay at hotel near venue, etc.) Event personnel and volunteer travel demand
	<ul style="list-style-type: none"> Site 	<ul style="list-style-type: none"> Required road closures to stage event
	<ul style="list-style-type: none"> Parking 	<ul style="list-style-type: none"> Number of parking spaces lost in order to stage event (e.g., parking for event participants, hospitality tents, etc.)

in estimating modal split. The traffic operations agency or traffic engineering consultant performs the analysis, and either stakeholder may research historical traffic and parking data or maintain a data archive related to operations for similar planned special events.

Modal Split

Under the scope of a feasibility study, modal split concerns identifying the existing modes of travel event patrons will use to access the event venue site. Common travel modes include personal automobile, public transit, and walking. Public transit refers to scheduled bus transit or commuter rail. Transit agencies may assist in determining a base transit split, without service incentives or promotion, for patrons traveling to/from the event.

Illustrated in Figure 5-6, some patrons of the 1986 and 1995 U.S. Golf Open in rural Southampton, NY found the Long Island Rail Road commuter rail service an efficient and convenient mode of travel to/from Shinnecock Hills Country Club. To assure consideration of appropriate roadway mitigation, transportation operations planners analyzed a range of modal split percentages in the feasibility study to account for various scenarios. Commuter rail or other people mover systems exist in several metropolitan areas across the Nation and usually provide regular service to city stadium and arena venues. Transit availability includes scheduled express and charter bus service operating from other cities, suburban park and ride lots, and city neighborhoods.

Table 5-12 lists surveyed modal splits for discrete/recurring events at a permanent venue in San Francisco, New York, and San Diego. The baseball stadium venues in San

Francisco and New York, located within a metropolitan area, have excellent scheduled transit service, including commuter rail. Stadiums located in suburban areas, such as Qualcomm Stadium in San Diego, and rural areas generally have a high percentage of automobile trips.

Travel time, travel convenience, parking accessibility and cost weighs significantly on an event patron's decision to drive or utilize an alternate mode of travel. This likely represents another contributor to the high transit split in the San Francisco example, where Pacific Bell Park resides adjacent to the downtown area. Other modes of travel include bicycle and taxi.



Figure 5-6
Commuter Rail Modal Split

Walking trips deserve consideration in modal split estimates for planned special events occurring at downtown venues. Practitioners must consider the proximity of

Table 5-12
Example Modal Split for Discrete/Recurring Events at a Permanent Venue

EVENT	ATTENDANCE	MODE OF TRAVEL			
		AUTO	TRANSIT	WALKING	OTHER
San Francisco Giants <u>weekday</u> baseball game – August 2000 ⁽¹⁴⁾	38,000 – 41,000 (capacity 41,000)	48%	41%	8%	3%
San Francisco Giants <u>weeknight</u> baseball game – August 2000 ⁽¹⁴⁾	38,000 – 41,000 (capacity 41,000)	50%	37%	7%	6%
San Francisco Giants <u>weekend</u> baseball game – August 2000 ⁽¹⁴⁾	38,000 – 41,000 (capacity 41,000)	58%	34%	5%	4%
New York Mets <u>weeknight</u> baseball game – June 1997 ⁽¹⁵⁾	18,000 (capacity 56,500)	59%	41%	--	--
San Diego Padres <u>weekday</u> baseball game – April/May 1998 ⁽¹⁶⁾	Unknown	85%	12%	--	3%
San Diego Padres <u>weeknight</u> baseball game – April/May 1998 ⁽¹⁶⁾	Unknown	95%	5%	--	--
San Diego Padres <u>weekend evening</u> baseball game – April/May 1998 ⁽¹⁶⁾	Unknown	85%	12%	--	3%

employment centers, residential developments, and hotels to a planned special event venue before dismissing walking as a viable travel mode. Venues located on university campuses typically draw a measurable percentage of walking trips. Surveys for college football games have reported as many as 10 to 25 percent of event patrons arriving by foot.⁽¹⁷⁾

Practitioners can best obtain measured data on planned special event modal split through conducting a survey of event patrons. Appendix D contains an Internet-based event patron evaluation survey for those attending the 2003 Fair Saint Louis festival. In addition to querying event patrons on mode of travel, obtaining origin location information (e.g., zip code) assists event planning team stakeholders configure transit schedules or express and charter bus services for future similar events.

Event Traffic Generation

Unlike other traffic generators such as commercial developments, planned special event practitioners typically have advance knowledge of event attendance and, in turn, can develop traffic generation estimates via vehicle occupancy factors. On the other hand, traffic generation rates, based on event traffic volume or parking occupancy data, may not be appropriate for transfer and application from one special event to another. Too many variables exist with regard to event category, event logistics, event popularity, weather, and parking characteristics. Event operations and other external variables affect any application of historical data to future events.

Table 5-13 outlines a two-step process for forecasting event traffic generation. Input data includes a modal split estimate since

Table 5-13
Traffic Generation Forecast Process

COMPONENT	DETAIL
Input data	<ul style="list-style-type: none"> • Daily attendance • Percent automobile trips • Vehicle occupancy factor
Method	<p><i>Step 1.</i> (Daily Attendance) x (Percent Automobile Trips) = Person Trips Via Automobile</p> <p><i>Step 2.</i> (Person Trips) / (Vehicle Occupancy Factor) = Vehicle Trips</p>
Result	<ul style="list-style-type: none"> • Number of vehicle trips by personal automobile both to and from the event

the traffic generation forecast aims to estimate the number of event-generated trips by personal automobile. In the absence of a daily attendance estimate, practitioners can use percentage of venue capacity as a base. However, many continuous events or street use events do not have a pre-specified venue capacity. Continuous events, such as fairs and festivals, often run for two or more days. Attendance generally fluctuates greatly from day to day, with Saturday operations yielding the highest daily attendance. A study of two-day (Saturday/Sunday) festivals in West Virginia indicated 58 percent of the total festival attendance was on Saturday.⁽¹⁸⁾ The same study noted the following total event attendance distribution for three-day festivals: 20 percent on Friday, 50 percent on Saturday, and 30 percent on Sunday. It should be recognized that daily attendance reflects scheduled headline entertainment or other main festival events.

Vehicle occupancy factors can serve as the basis for estimating event-generated traffic. Table 5-14 lists average vehicle occupancy factors for select discrete/recurring events at a permanent venue and continuous events. A discrete/recurring event at a permanent venue that occurs on the weekend will likely have a higher vehicle occupancy factor due to families and groups of tailgaters. A vehicle occupancy factor of 2.5 persons per vehicle represents a common assumption, however for forecasting purposes, practitioners should consider a range of factors from 2.2 to 2.8 depending on local conditions.⁽¹⁵⁾

Traffic Arrival and Departure Rate

In order to estimate peak traffic volumes generated by an event, practitioners must estimate the time and scope of peak traffic flow during event ingress and egress. Traffic arrival and departure rate indicates the peak period (e.g., hour or 15 minute) of event-generated traffic. The rate is used to determine the following key parameters for input into the traffic demand analysis: (1) peak period time and (2) percent of total event-generated traffic within the peak period. Event operation characteristics that influence traffic arrival and departure rates include:

- Event time and duration – e.g., specific start time, abrupt end time, continuous operation.
- Event time of occurrence – e.g., day/night, weekday/weekend.
- Audience accommodation – e.g., reserved seating, general admission.
- Event type – e.g., sports/concert, fair/festival, parade/race.

This section focuses on estimating the traffic arrival rate. The temporal share of event patron arrivals vary considerably by event type and requires prediction by practitioners. Traffic arriving to an event can potentially cause greater impacts to background traffic mobility than event departure traffic. This is attributed to arrival traffic typically traveling from high-capacity roadway facilities (e.g., freeways and arterials) to low-capacity facilities (e.g., venue access roads). Roadway

Table 5-14
Example Planned Special Event Vehicle Occupancy Factors

EVENT	ATTENDANCE	AVERAGE VEHICLE OCCUPANCY
<i>Discrete/Recurring Event at a Permanent Venue</i>		
San Francisco Giants baseball games – August 2000 ⁽¹⁴⁾	38,000 – 41,000 (capacity 41,000)	2.8 persons per automobile
Anaheim Angels weeknight baseball game – July 1997 ⁽¹⁵⁾	18,197 (capacity 37,000)	2.6 persons per automobile
Cleveland Indians Saturday baseball game – July 1997 ⁽¹⁵⁾	43,070 (capacity 43,368)	2.64 persons per automobile
New York Mets weeknight baseball game – June 1997 ⁽¹⁵⁾	18,000 (capacity 56,500)	2.31 persons per automobile
San Diego Padres <u>weekday</u> baseball game – April/May 1998 ⁽¹⁶⁾	Unknown	2.3 persons per automobile
San Diego Padres <u>weeknight</u> baseball game – April/May 1998 ⁽¹⁶⁾	Unknown	2.5 persons per automobile
San Diego Padres <u>weekend evening</u> baseball game – April/May 1998 ⁽¹⁶⁾	Unknown	3.0-3.1 persons per automobile
Denver Broncos football games – 1998/2001 ⁽¹⁹⁾	76,000	3.0 persons per automobile <u>on-site</u> ; 2.3 persons per automobile <u>off-site</u>
<i>Continuous Event</i>		
1997 Stonewall Jackson Heritage Arts & Crafts Jubilee - West Virginia ⁽¹⁸⁾	45,000 to 50,000 (four-day total)	2.46 persons per automobile
1997 West Virginia Honey Festival ⁽¹⁸⁾	6,000 (two-day total)	2.15 persons per automobile
1997 West Virginia Wine & Jazz Festival ⁽¹⁸⁾	3,500 (two-day total)	2.42 persons per automobile
22 nd Mountain Heritage Arts & Crafts Festival – West Virginia ⁽¹⁸⁾	25,000 (three-day total)	2.30 persons per automobile

congestion that occurs during event ingress may create queue spillbacks to freeways and major streets, thus impacting background traffic.

Drivers departing an event venue site generally have little or no choice of exit routes. Roadway capacity constraints include freeway entrance ramps and turning movements to arterials and other major collector roadways. Departing traffic queues are usually constrained to the venue access roadway and spillback into the parking areas. Figure 5-7 shows traffic operations, following a football game at Qualcomm Stadium in San Diego, CA, at: (1) a freeway entrance ramp, (2) a venue access road upstream of a freeway, and (3) an on-site venue parking area.



Figure 5-7
Event Patron Departure from a Discrete/Recurring Event at a Permanent Venue

Table 5-15 indicates traffic arrival rates and time of peak arrival for select discrete/recurring events at a permanent venue and continuous events. Time of arrival depends on audience accommodation (e.g., general admission or reserved seating) and/or the nature of pre-event activities. Such activities include tailgating or practices. Figure 5-8 illustrates NASCAR pre-race preparations that attract a significant number of event patrons well before the event start.

As illustrated in Table 5-15, the traffic arrival rate for sporting games and concerts peaks within one hour of the event start. Due to high traffic arrival concentration, practitioners may consider estimating a peak 15-minute traffic arrival rate and associated peak hour factor for roadway capacity analysis. With regard to continuous events, peak traffic arrival rate generally occurs

immediately prior to the event start. Since event patrons do not place a high priority on meeting a continuous event start time, the concentration of continuous event arrivals is relatively low compared to other event categories. The peak level of event-generated traffic demand may occur during the middle of a continuous event operating period when both event arrival and departure traffic traverse the roadway system as patrons come and go from the event.

Practitioners may use event patron travel surveys in addition to historical event-generated traffic volume and/or parking occupancy counts to estimate the traffic arrival rate and peak time of occurrence. It should be noted that weather conditions, particularly for continuous events and street use events, may significantly skew data. Thus, practitioners must exercise great care when developing future event estimates from historical data.

Table 5-15
Example Planned Special Event Traffic Arrival Rate Characteristics

EVENT	ATTENDANCE	EVENT START	SITE OPEN	PEAK TRAFFIC FLOW OCCURRENCE
<i>Discrete/Recurring Event at a Permanent Venue</i>				
2001 NASCAR Kansas 400 ⁽²⁰⁾	100,000+	12:00 P.M.	6:00 A.M.	8:00 A.M.
Anaheim Angels weeknight baseball game – July 1997 ⁽¹⁵⁾	18,197 (capacity 37,000)	Evening	2+ hours before first pitch	1 hour before first pitch (82% of arrivals – 29% peak 15 minutes)
Cleveland Indians Saturday baseball game – July 1997 ⁽¹⁵⁾	43,070 (capacity 43,368)	Afternoon	2+ hours before first pitch	1 hour before first pitch (67% of arrivals – 19% peak 15 minutes)
New York Mets weeknight baseball game – June 1997 ⁽¹⁵⁾	18,000 (capacity 56,500)	Evening	2+ hours before first pitch	1 hour before first pitch (62% of arrivals – 16% peak 15 minutes)
<i>Continuous Event</i>				
Louisiana World Exposition in New Orleans – <u>weekday</u> August 1984 ⁽²¹⁾	35,700	10:00 A.M.	--	31% of event patrons arrived by 11:00 A.M.
Louisiana World Exposition in New Orleans – <u>Saturday</u> in August 1984 ⁽²¹⁾	Unknown	10:00 A.M.	--	29% of event patrons arrived by 11:00 A.M.



Figure 5-8
Pre-Event Activity

Market Area Analysis

A market area analysis identifies the origin and destination of trips to and from a planned special event. The analysis focuses on developing a regional directional distribution of event patron trips to/from an event site via personal automobile. The site refers to the collective parking areas serving the venue. A regional directional distribution specifies: (1) the freeway and arterial corridors serving the venue site and (2) the percent split and volume of event-generated automobile trips traversing each corridor. Appendix E contains a regional directional distribution prepared for the NASCAR Kansas 400 race.⁽²⁰⁾

Table 5-16 summarizes three analysis methods used to define a planned special event market area.

Travel Time and Distance Analysis

Practitioners can apply a travel time analysis or distance analysis to estimate the market area for any planned special event. Continuous events or street use events that do

not offer advance ticket sales typically require a market analysis based on travel time or distance and referencing area population distribution.

Figure 5-9 illustrates an example travel time analysis for a downtown Chicago lakefront fireworks display. A geographic information system or other mapping software tool can create travel time zones, as shown in the figure, based on user-defined thresholds. Multiple travel time zones allow users to perform a weighted analysis of population distribution. Practitioners should categorize area population within each travel time zone by zip code or, for a 15 minute threshold or less, by census tract. Most geographic information systems and computer mapping tools generate spreadsheets identifying all spatial population categories within each travel time zone. Using the spreadsheet, practitioners can assign a freeway or arterial corridor, serving the event venue site, to each defined population category. The population distribution among roadway system corridors constitutes the regional directional distribution for the planned special event. Practitioners can also incorporate Census socioeconomic data into an analysis as necessary.

The described travel time analysis methodology applies to a distance analysis as well. Instead of travel time thresholds, users define distance thresholds. Practitioners should exercise care in developing a planned special event market area by travel time or absolute distance to the event venue site:

- In the case of continuous events or street use events, the market area must incorporate only the community or region the event is staged for.

Table 5-16
Market Area Analysis Methods

METHOD	DESCRIPTION
Travel time analysis	<ul style="list-style-type: none"> Determine population distribution within travel time threshold of event venue.
Distance analysis	<ul style="list-style-type: none"> Determine population distribution within distance radius of event venue.
Origin location analysis	<ul style="list-style-type: none"> Determine weighted distribution of known origins by place or zip code.



Figure 5-9
Example Travel Time Analysis

- Discrete/recurring events at a permanent venue, such as professional/major college sporting events or major concerts, warrant an expanded market area.
- A travel time or distance analysis for these events should not reflect a sensitivity to travel time or distance at the city/suburb level. In other words, an event patron located in a city suburb typically does not factor travel time into a decision to attend a professional or major college sporting event at a downtown venue.

Origin Location Analysis

An origin location analysis represents the most accurate method for developing an event-specific regional directional distribution. This analysis utilizes a statistically significant database of event patron travel

origins. Input data includes advance or season ticket holder place of residence (e.g., place or zip code) or place of trip origin obtained through a past/similar event travel survey. An event economic impact study also indicates the cities or regions patrons will arrive from. A discrete/recurring event at a permanent venue requires ticket sales, and event organizers initiate ticket sales weeks and even months in advance of the event. But, event organizers or ticket sales companies may consider customer information confidential or proprietary.

An event patron travel survey (see Appendix D) proves effective in determining the exact origin of a patron trip to a planned special event. For instance, weekday events may attract a significant percentage of non-home-based trips as event patrons arrive from work. A survey of patrons attending week-night baseball games at Pacific Bell Park in San Francisco indicates 28 percent of patrons come from work.⁽¹⁴⁾ An event patron travel survey captures this critical information. Event patron departures from the event venue site typically involve home as a destination.

Practitioners performing an origin location analysis determine a geographical distribution of event patron origins. In turn, this distribution defines the freeway and arterial corridors that event patrons will use to access the event venue site in addition to a traffic distribution. An origin location analysis applies to all planned special events.

Parking Demand Analysis

A parking demand analysis functions to determine the amount of required parking for event patrons in the vicinity of the event venue. A parking occupancy study drives the overall analysis and determination of event parking areas. This study indicates the level of parking spaces occupied, relative to lot capacity, at intermittent time intervals. It also specifies an estimate of peak parking demand, a figure particularly useful for managing continuous events where parking space turnover occurs throughout the event day.

Figure 5-10 presents a parking demand analysis process used to determine the adequacy of event venue (on-site) parking and the identification of appropriate off-site parking areas. The flowchart denotes an analysis conducted for a one-time interval. Practitioners should perform an iterative parking demand analysis, over hourly time periods as necessary, if considering parking areas characterized by high background parking turnover.

Examination of on-site parking areas must account for spaces lost to the event sponsors, bus staging, limousine and taxi staging, media parking, event employee parking, and event participant parking. Net parking supply incorporates event staging needs and any background traffic that can legally use the parking area during event hours of operation. In order to conceptually measure parking supply within a non-striped area, assume 150 cars per acre as a rule of thumb.⁽²²⁾ The travel forecast analysis yields an estimate of parking demand by quantifying the anticipated number of event-generated automobile trips. Aside from continuous events, practitioners should perform a parking demand analysis that accounts for maximum event-generated parking demand.

In evaluating parking supply versus demand, consider as a rule of thumb that 90 to 95 percent lot occupancy represents a full parking area.⁽²³⁾ This especially applies under scenarios where event patrons must self-park. When a parking area reaches a near-capacity occupancy level, drivers experience difficulty locating an empty parking space and must circulate through the lot again or seek another parking area. Continuous events and street use events often utilize self-park areas.

Overflow parking areas comprise both on-street parking and public/private off-street parking areas, located off-site but in the immediate vicinity of the event venue. Figure 5-11 shows a designated off-street parking area, as noted by a light post banner, for the Summerfest music festival in downtown Milwaukee, WI. Identification of off-site parking areas depends on walking distance to the event venue. For example, a 15-minute walking time threshold allows consideration of off-street parking areas within 3,600 feet of an event venue, assuming a pedestrian walking speed of 4 feet per second. Parking areas located further from the venue would require a continuous shuttle service.

Table 5-17 shows a parking occupancy summary for a regional/multi-venue event in downtown Denver, CO. The spreadsheet format conveniently organizes and presents occupancy estimates by time of day and day of week. A parking demand analysis for a regional/multi-venue event presents special challenges. Practitioners must determine the hourly parking requirements for each facility separately. Parking areas in this case function under *shared parking* operation, servicing variable demand rates from different planned special events over the course of a day.

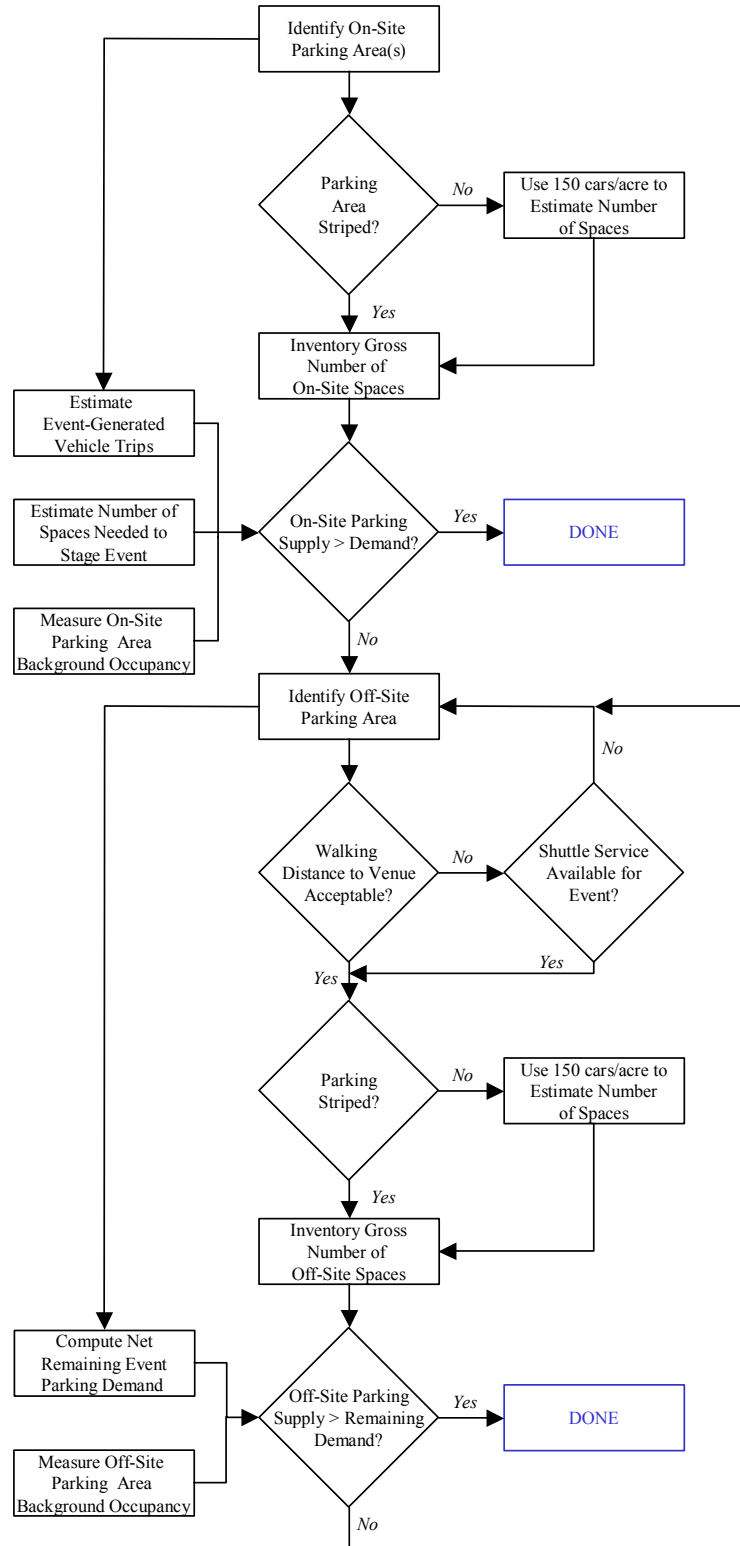


Figure 5-10
Parking Demand Analysis Process



Figure 5-11
Designated Event Off-Site Parking Area

Downtown Parking Summary w/ Coors Field

	Thursday	Friday	Saturday	Sunday
Total Spaces	42,605	42,605	35,380	35,380
Available Spaces	10,651	10,651	30,073	30,073
% Occupancy w/ Event Overflow Parking Downtown and using Coors Field*				
10:00	75%	73%	7%	14%
11:00	80%	79%	17%	41%
12:00	93%	84%	38%	57%
1:00	94%	84%	51%	68%
2:00	94%	84%	55%	83%
3:00	94%	78%	52%	92%
4:00	90%	73%	59%	75%

Events included are Rockies game on Thursday and TOC/GP Fri-Sun

Table 5-17
Example Event Parking Occupancy
Summary⁽²³⁾

Traffic Demand Analysis

A traffic demand analysis determines: (1) a local area directional distribution and (2) the overall assignment of event-generated traffic. This analysis references results obtained through the travel forecast, market area analysis, and parking demand analysis.

The local area directional distribution indicates freeway ramps and intersections, including turning movements, traversed by

event-generated traffic arriving to or departing from a planned special event. The regional directional distribution, as determined in the market area analysis, quantifies the percentage of event patron trips (e.g., origins) by regional freeway and arterial corridor, and the planned special event parking areas, as determined in the parking demand analysis, represent *sink nodes* or location of trip destination. Traffic assignment includes event-generated automobile traffic, express buses, charter buses, limousines, and other vehicles transporting event patrons, participants, and event employees. Practitioners performing traffic demand analyses should possess a personal knowledge of the roadway system surrounding an event venue in addition to existing traffic conditions.

A parking demand analysis assesses event parking *sufficiency*. The analysis does not define local traffic patterns to/from individual parking areas. Practitioners, instead, must gauge the utility associated with drivers choosing individual parking areas. The key components comprising this utility include driving time, parking cost, and walking time.⁽²⁴⁾ The attractiveness of each lot varies by freeway or arterial corridor serving the event site, yet event patrons will accept a moderate increase in overall driving/walking time in exchange for a substantial parking cost savings. The event planning team and traffic management team must recognize such driver behavior and formulate the appropriate traffic flow routes and develop traffic management strategies to manage site access and circulation effectively. Figure 5-12 illustrates one strategy, instituting on-street parking restrictions on the day-of-event. Pre-trip and en-route traveler information also influences driver choice regarding parking selection.



Figure 5-12
Local Area Planned Special Event Parking Restriction

Traffic demand analysis includes developing composite background and event-generated traffic projections for all roadway system facilities serving the event venue. Composite traffic volumes expressed as an hourly (or sub-hourly) rate meet roadway capacity analysis input requirements. These rates identify the peak hour capacity analysis periods during event patron arrival and/or departure. Practitioners must adjust background traffic volumes to account for displaced and diverted traffic due to road closures required to stage the planned special event. These road closures alter traffic patterns to/from commercial trip generators, residential areas, and places of worship. Displaced background traffic assignment involves identifying the shortest path alternate route that has excess capacity.

As a preliminary step to assess the need to perform a detailed roadway capacity analysis, draw a circular screen line (e.g., 0.5 to 1 mile radius) around the event venue site. Note each roadway segment intercepted by the screen line, and estimate the segment's capacity in each direction of travel. Create a chart of hourly composite traffic volumes for each identified segment, and assess capacity deficiencies in both directions of travel. Figure 5-13 shows a preliminary

road segment capacity analysis conducted as part of a feasibility study for a regional/multi-venue event in Denver, CO.

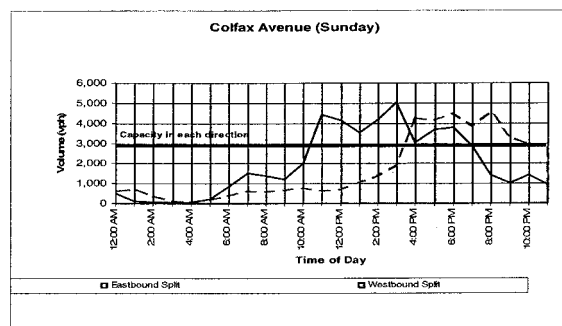


Figure 5-13
Example Preliminary Road Segment Capacity Analysis⁽²³⁾

Roadway Capacity Analysis

A roadway capacity analysis uses traffic demand analysis results to measure the impact of a proposed planned special event on roadway system operations. At the feasibility study level, a roadway capacity analysis references existing roadway facility operations and capacity (e.g., no reverse flow operation or other capacity enhancements). The analysis assumes pedestrian access management strategies will minimize pedestrian/vehicular conflicts, and parking area access points provide sufficient service flow rates through proper design. Regardless of capacity analysis outcome, pedestrian accommodation and parking management represent key considerations in a planned special event traffic management plan.

Roadway capacity analysis involves freeway segments, freeway junctions such as ramps and weaving areas, street segments, signalized intersections, and unsignalized intersections. To evaluate these facilities, practitioners can employ one of two approaches: (1) analyze section and point capacity or (2) analyze network operations.

- The first approach pertains to applying Highway Capacity Manual (HCM) recommended capacity analysis methodologies to discrete locations in the study area. Practitioners determine roadway sections, freeway junctions, or intersections for analysis, then apply an appropriate HCM methodology to identify movement capacity constraints and measure operations level of service.
- The latter approach concerns utilizing a computer traffic simulation model to identify bottleneck locations, or *hot spots*, and associated saturation flow rates. Practitioners scope the size and detail of the simulation model network, and the model works to reveal operational deficiencies.

Computer traffic simulation models provide seamless analysis of traffic operations across a network of roadway segments and intersections. This proves particularly useful in analyzing a corridor of closely spaced traffic signals where signal coordination and vehicle spillback from adjacent intersections sharply impact traffic operations. Numerous macroscopic and microscopic simulation models exist, including the CORSIM microscopic computer traffic simulation model developed and supported by FHWA. CORSIM can interface component freeway (FRESIM) and arterial (NETSIM) simulation models. For example, it has the capability of showing a freeway entrance ramp bottleneck and the resulting queue spillback on adjacent streets (or vice versa). As shown in Figure 5-14, CORSIM also affords practitioners and event planning team stakeholders the opportunity to view an animation of simulated traffic operations.



Figure 5-14
CORSIM Simulation Animation

Mitigation of Impacts

Mitigating anticipated planned special event impacts on travel represents the ultimate goal of conducting a feasibility study. The mitigation of congestion and potential safety impacts identified through a feasibility study requires development of a traffic management plan and complementing travel demand management strategies. In turn, practitioners can utilize the tools and techniques used to determine feasibility study results in order to evaluate various mitigation strategies and determine if the selected strategies adequately mitigate identified transportation system deficiencies.

Table 5-18 lists numerous tools for mitigating planned special event impacts on local roadway and regional transportation system operations. In meeting the overall travel management goal of *achieving efficiency*, these tools target utilizing the excess capacity of the roadway system, parking facilities, and transit. Through travel demand management, event planning team stakeholders develop attractive incentives and use innovative communication mechanisms to influence event patron decision-making and, ultimately, traffic demand. Chapters 6 and 7

Table 5-18
Tools for Mitigating Planned Special Event Impacts on Transportation System Operations

CATEGORY	EXAMPLE TOOLS
<i>Traffic Control and Capacity Improvements</i>	
Freeway traffic control	<ul style="list-style-type: none"> • Ramp closures or additional capacity • Alternate routes • Ramp metering
Street traffic control	<ul style="list-style-type: none"> • Lane control • Alternative lane operations • Road closures • On-street parking restrictions • Trailblazer signing • Parking management systems
Intersection traffic control	<ul style="list-style-type: none"> • Access and turn restrictions • Advance signing to improve traffic circulation • Traffic signal timing and coordination
Traffic incident management	<ul style="list-style-type: none"> • Service patrols • Tow truck staging • Advance congestion warning signs • Portable lighting
<i>Traffic Management</i>	
Traffic surveillance	<ul style="list-style-type: none"> • Closed-circuit television systems • Field observation • Aerial observation • Media reports • Portable traffic management systems
En-route traveler information	<ul style="list-style-type: none"> • Changeable message signs • Highway advisory radio • Media • Static signing • Destination signing
<i>Travel Demand Management</i>	
Transit incentives	<ul style="list-style-type: none"> • Public transit service expansion • Express bus service from park and ride lots • Charter bus service
High occupancy vehicle incentives	<ul style="list-style-type: none"> • Preferred parking • Reduced parking cost
Event patron incentives	<ul style="list-style-type: none"> • Pre-event and post-event activities
Bicyclist accommodation	<ul style="list-style-type: none"> • Bicycle routes and available parking/lock-up
Local travel demand management	<ul style="list-style-type: none"> • Background traffic diversion • Truck diversion
Pre-trip traveler information	<ul style="list-style-type: none"> • Internet • Telephone information systems • Public information campaign • Event and venue transportation guide • Media

detail impact mitigation strategies and tactics.

EXTERNAL FACTORS AFFECTING SCOPE OF EVENT IMPACT

Overview

This chapter summarizes event operations planning and impact analysis activities that address the core factors affecting planned special event severity. That is, *travel demand*, *road/site capacity*, and *event operation*. A number of secondary factors warrant consideration in the event operations phase, including:

- Available resources
- Weather
- Concurrent roadway construction
- Concurrent planned special events

These factors can greatly influence the level of impact a planned special event has on transportation system operations. By gaining an understanding of the special challenges that these external factors present, the event planning team can develop appropriate contingency response plans, using the tools and strategies presented in Chapters 6 and 7, to mitigate infrequent but high-impact scenarios.

An assessment of the level of impact that an external factor has on travel during a particular planned special event involves the consideration of the following components:

- Duration – temporal impact (e.g., when does the external factor impact operations and for how long?).
- Extent – spatial impact or scope of area

affected (e.g., does the external factor impact a particular corridor or the entire region?)

- Intensity – volume of impact (e.g., how severe is the impact?)

Practitioners should express the impact of an external factor in terms of how it affects travel demand, road/site capacity, and personnel/equipment resource quantities. Feasibility study input data can reflect adjustments made due to certain anticipated external factors, or practitioners can rerun parking and roadway capacity analyses to account for a new unexpected factor (e.g., occurrence of emergency road construction). In turn, revised results may warrant adjustments to the event traffic management plan.

Available Resources

Available resources refer to the quantity and experience of personnel and equipment available to plan and conduct day-of-event travel management operations. Besides the size of a planned special event, the level of required resources depend on time/place of occurrence, other planned special events, and equipment status.

A special factor that may place significant strain on available resources involves the occurrence of planned special events at a venue under reconstruction. Shown in Figure 5-15, venue reconstruction places additional demand on the amount of traffic management team personnel and equipment resources needed to manage events hosted by the venue during its reconstruction. Stakeholder response to on-site parking restrictions include redevelopment of traffic management plans to accommodate parking demand, pedestrian access, and traffic flow in the immediate vicinity of the venue.



Figure 5-15
Stadium Reconstruction

Figure 5-16 presents a site and pedestrian accommodation plan for 2002 Green Bay Packers games during Lambeau Field renovation. Appendix F contains contingency parking and pedestrian accommodation plans for event patrons traveling to Lambeau Field.

Weather

Weather conditions affect travel demand, road/site capacity, or both. For example, in winter, snow banks in permanent venue parking areas reduce the number of on-site parking spaces required for an event sell-out. Rain can create significant problems for unpaved parking areas and access roads. A one-day rain event totaling approximately 0.70 inches during the 2002 U.S. Golf Open forced the traffic management team to close all unpaved parking areas adjacent to the golf course. Figure 5-17 displays a traffic advisory service television announcement issued to indicate contingency parking arrangements that used paved lots.

With regard to travel demand, weather conditions have a significant impact on attendance (e.g., increased attendance or reduced attendance) and/or the rate of arrivals and departures at some special events. For instance, event patrons will attend an event at a domed stadium on a rainy day, but patrons

will bypass arriving at the venue early to tailgate, thus concentrating patron arrivals.

Concurrent Road Construction and Planned Special Events

The occurrence of planned events, including road construction and other planned special events, create a range of impacts affecting different traffic management plan components. On a regional level, the characteristics (e.g., increased traffic demand, road/lane closures) of concurrent planned events reduce available capacity in roadway corridors serving a particular planned special event, thus affecting traffic flow patterns. Local impacts include reduced parking supply, in the event of other area planned special events, and restricted traffic circulation.

The identification of concurrent planned events requires interagency communication at the local, county, and state level. Figure 5-18 illustrates an example of a local department of public works (DPW) inventory, accessible through the DPW website, of active local road construction and other planned special events within the jurisdiction.

Key considerations include:

- With regard to planning for a specific planned special event, the event planning team should identify road construction activities in all jurisdictions within a certain travel time or distance radius, equivalent to the event market area, of the event venue. Appendix G contains a local stakeholder outreach letter prepared by the Wisconsin DOT to identify local road construction in the vicinity of Miller Park and scheduled during the 2002 All-Star baseball game.

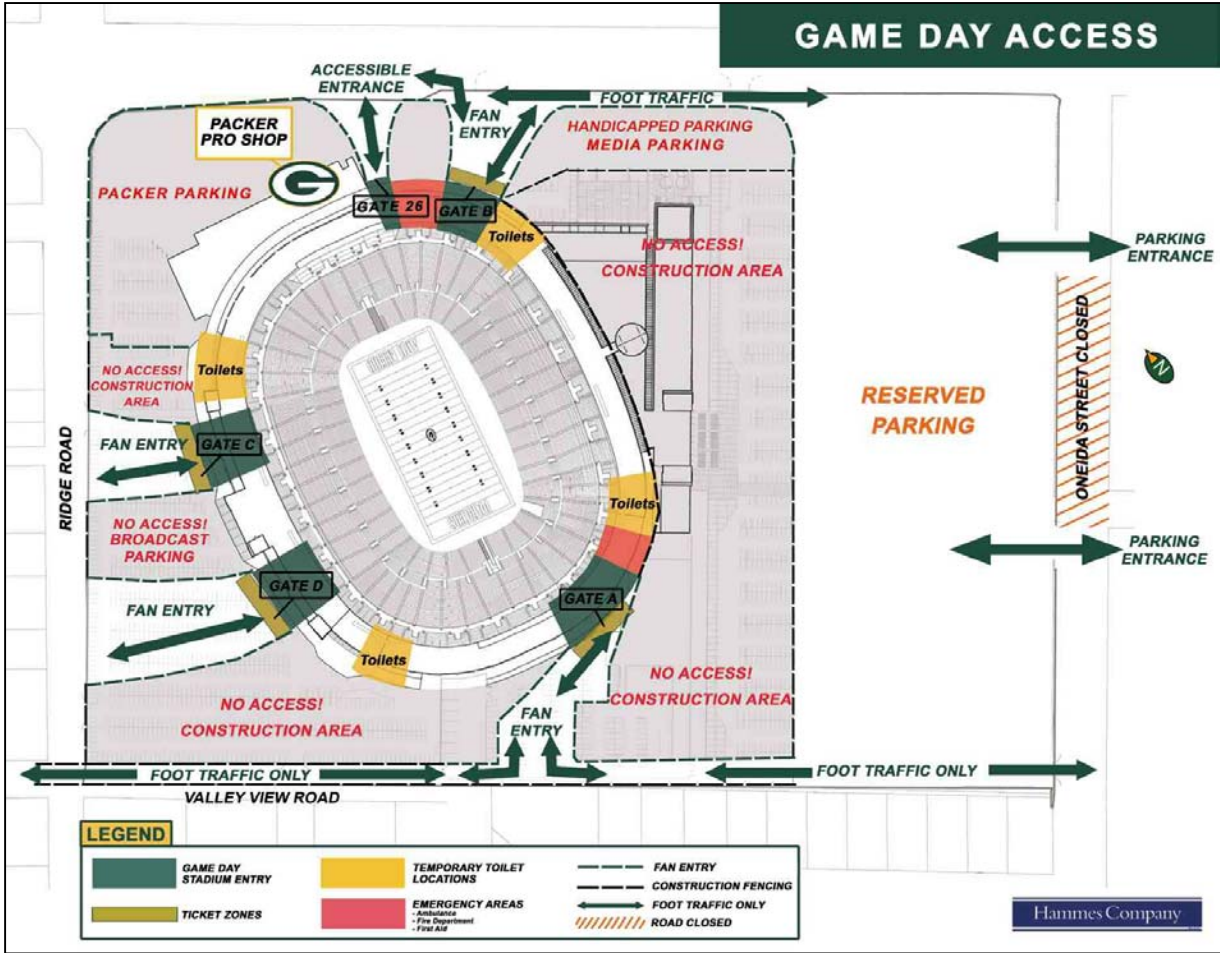


Figure 5-16
 Site and Pedestrian Accommodation Plan for Stadium Reconstruction



Figure 5-17
 Contingency Parking Plan for Weather

- The event planning team must also interact with area venue operators and determine a timeline of planned special events in the region, particularly those affecting the transportation system serving the subject planned special event.
- Recognizing the regional impacts (e.g., county and multi-county) of major planned special events, the event planning team should obtain information, including attendance estimates, on planned special events occurring in other metropolitan areas and areas with large venues within a certain radius (e.g., 50 or 100 miles). Highway corridors traversing one jurisdiction can realize a significant

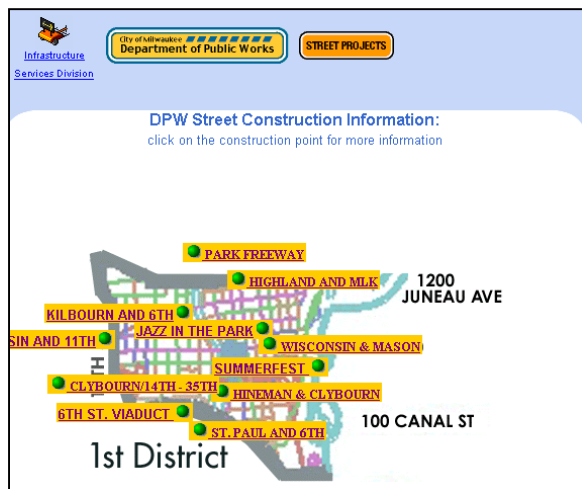


Figure 5-18

Internet Summary of Road Construction and Planned Special Events (*Graphic courtesy of the City of Milwaukee DPW.*)

increase in background traffic during typical off-peak periods as a result of traffic generated by major events occurring in other jurisdictions.

External Factor Monitoring and Assessment

The event planning team should maintain, and continually update, a spreadsheet matrix or map of inter-jurisdictional roadway construction and planned special events occurring over some defined period of time. For example, Appendix G contains a Wisconsin DOT summary of local and state road construction coupled with major planned special events occurring in the Milwaukee metropolitan area over Summer 2002. Identification of concurrent planned events allows stakeholders to merge transportation planning and operations efforts and consider revising road construction schedules.


On a broader scale, a regional committee on planned special events monitors planned events across a metropolitan area through

regular meetings with traffic operations agencies, law enforcement, community officials, event organizers, and other agencies. The committee facilitates communication and coordination between specific event planning and operation task forces to ensure optimal application of personnel and equipment resources. The Traffic Incident Management Enhancement (TIME) program in southeastern Wisconsin maintains such a committee. As highlighted in Chapter 2, the TIME special event committee proposed development of a traffic management planning tool designed to evaluate the severity level of any planned special event proposed in the greater Milwaukee metropolitan area. Table 5-19 lists specific external factors, and associated criteria, accounted for in the draft planning tool.

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Table 5-19
External Factors Considered in the Wisconsin TIME Program
Special Event Planning Tool⁽²⁵⁾

QUESTION	INCREASING EVENT IMPACT 				
	CRITERIA				
What is the effect of construction on traffic?					
Is there a construction project on any of the corridors leading to or away from the special event venue?	Not applicable	Some impact	Moderate impact	Considerable impact	Severe impact
Are there any lane closures?					
What effect does the event scheduling have on traffic?					
Is the event scheduled to begin or end during a peak period?	Not applicable	Some impact	Moderate impact	Considerable impact	Severe impact
Is there more than one event beginning or ending at the same time?					
What are the weather conditions?					
Is there a forecast for severe weather before, during, or after the special event that might affect traffic?	Clear	Mild	Moderate	Severe-summer	Severe-winter
Are all human resources available?					
Is the event scheduled to begin and end during normal working hours?	Yes	Most	Some	Few	None
Are key individuals available if needed?					
Is all equipment available?					
Are all facilities available?	Yes	Most	Some	Little	None
Is communication equipment working?					
Is all traffic control equipment available?					

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CHAPTER SIX

TRAFFIC MANAGEMENT PLAN



Figure 6-1
Temporary Reversible Lane Operation

PURPOSE

This chapter details the components of the traffic management plan, which represents the main product of the event operations planning phase. A traffic management plan indicates *how* traffic, parking, and pedestrian operations will be managed on the day-of-event. The plan contains strategies and tactics for mitigating travel impacts identified in a planned special event feasibility study analysis (Chapter 5). It also accommodates travel demand management initiatives aimed at improving transportation system operations on the day-of-event.

This chapter provides data, guidelines, procedures, and checklists, supported by nu-

merous example applications, to assist practitioners in developing a traffic management plan. A comprehensive plan consists of a *site access and parking plan*, *pedestrian access plan*, *traffic flow plan*, *traffic control plan*, *en-route traveler information plan*, *traffic surveillance plan*, and *traffic incident management and safety plan*. Sections on *plan components* and *analysis and modeling* further guide practitioners by presenting a fundamental background on traffic management plan development and evaluation. The organization of this chapter allows practitioners to conveniently extract information on developing a particular traffic management plan component. At the same time, this chapter guides the user in integrating the components into an overall plan.

INTRODUCTION

After identifying traffic operations deficiencies in the planned special event feasibility study, the next step for the event planning team is to develop a traffic management plan that details traffic, parking, and pedestrian management techniques to mitigate any and all anticipated problems on the day-of-event. The challenge to stakeholders involves not only developing a strategy to mitigate a potential congestion or safety *hot spot*, but also ensuring each tactic does not defeat the objectives of another.

A breakdown (e.g., pedestrian flow) occurring at the venue, parking areas, site access roads, transit system, local street system, or regional corridors serving the event can yield a potential snowball effect on other integrated components of the transportation system. A proactive traffic management plan for planned special events prohibits individual transportation system components from impeding one another. It represents a flexible plan that can adapt to and optimize proposed transit service changes and travel demand management initiatives.

The scope of a traffic management plan varies for each planned special event, even for events happening in the same jurisdiction or region. Different strategies and tactics are successful in handling different categories of planned special events occurring in metropolitan, urban, and rural areas. A successful traffic management plan satisfies both the: (1) customer requirements of all transportation system users and (2) allotted budget for personnel and equipment resources assigned to the day-of-event operation. From a program planning perspective, the deployment of automated systems at a particular venue improves travel management for all future planned special events at the venue. Similarly, a portable system obtained for use during a particular planned special event may

be used by practitioners to manage future planned special events in a region.

PLAN COMPONENTS

Overview

Managing travel for planned special events involves developing a transportation management plan that contains operations and service strategies specific to managing traffic, transit, and travel demand. A transportation management plan consists of three key components:

- Traffic management plan
- Transit plan
- Travel demand management initiatives

A transportation management plan represents an extension of the feasibility study, referencing study input data and analysis conclusions, then expanding the analysis to include mitigation strategies and tactics. These strategies create a physical change in travel pattern flow, and tactics describe available tools or management approaches to meet the associated strategy.

The feasibility study results influence the scope of the transit plan and other travel demand management initiatives by identifying traffic capacity deficiencies and community (e.g., residential and commercial business) impacts. Transit agencies may work off-line to develop a transit plan detailing schedules and necessary equipment and personnel resources. The transit plan may specify one of more categories of transit operation that include:

- Existing service plus additional vehicle hours (e.g., more frequent service or expanded hours of operation)
- Existing service plus route deviation (e.g., includes new stop at transit station(s) near venue)

- Express service (e.g., new route and schedule)
- Charter service (e.g., contract service)

Numerous factors affect the category and extent of service provided. Public transit agencies must consider service boundaries and Federal Transit Administration regulations, particularly with regard to charter service. Profitability and resource availability, particularly if the planned special event occurs during a commute or high-recreational traffic period, governs decision-making as well. A traffic management plan incorporates the transit plan by accommodating proposed services and/or mitigating service deficiencies. It also promotes special travel demand management strategies, such as designating parking in preferred locations for high occupancy vehicles only.

A traffic management plan includes operations strategies for managing event-generated and background traffic within the local and regional area impacted. The plan also specifies techniques to facilitate site access, parking, and pedestrian access. Table 6-1 lists objectives of a planned special event traffic management plan. Pedestrian accommodation involves handling pedestrians arriving to a planned special event venue via all available modes of travel. To ensure the dissemination of credible traveler information, the event planning team should include media representatives and partnerships developed if necessary. The traffic management plan should include mechanisms for dissemination of accurate and up-to-date information. The plan should state expected transportation conditions, categorized by mode of travel (e.g., expected travel time by car, transit, express/charter service, etc.), with congestion mitigation measures. Safety provisions include prevention of secondary traffic incidents, reduced driver confusion, and reduced vehicular and pedestrian conflicts.

Table 6-1
Traffic Management Plan Objectives

OBJECTIVE
<ul style="list-style-type: none"> • Facilitate safe and quick travel to/from the event site for spectators and participants. • Utilize excess transportation system capacity. • Maximize efficiency of parking operations and internal circulation. • Accommodate pedestrians. • Automate traffic control tasks. • Disseminate useful and credible traveler information. • Maximize safety. • Minimize impact on affected residents and businesses.

As shown in Table 6-2, the key components of a traffic management plan for planned special events include:

- Site access and parking plan
- Pedestrian access plan
- Traffic flow plan
- Traffic control plan
- En-route traveler information plan
- Traffic surveillance plan
- Traffic incident management and safety plan

Not all plan components represent a distinct formal plan but warrant consideration, either individually or in concert with another component. For instance, a traffic incident management (TIM) plan may reference an existing TIM manual for a region but include new operations details (e.g., freeway service patrol routes and quick clearance strategies) specific to the planned special event.

The event planning team in-charge of developing the traffic management plan also should consider the number and operating characteristics of traffic management team command centers to be used on the day-of-event. Figure 6-2 shows three command center arrangements for traffic management team operations on the day-of-event. Stake-

Table 6-2
Traffic Management Plan Components

COMPONENT	CONSIDERATION	COMPONENT	CONSIDERATION
Site Access and Parking Plan	<ul style="list-style-type: none"> • Lot assignment • Vehicle access and circulation <ul style="list-style-type: none"> ○ Parking area ingress ○ Pick-ups and drop-offs ○ Parking area egress • Parking area design and operation <ul style="list-style-type: none"> ○ Process component ○ Park component • Parking occupancy monitoring • Parking regulations • Traveler information 	Pedestrian Access Plan	<ul style="list-style-type: none"> • Pedestrian control <ul style="list-style-type: none"> ○ Pedestrian routing ○ Pedestrian crossing • Disabled accessibility • Shuttle bus service <ul style="list-style-type: none"> ○ Service design ○ Station design ○ Management ○ Cost
Traffic Flow Plan	<ul style="list-style-type: none"> • Route planning <ul style="list-style-type: none"> ○ Corridor traffic flow route ○ Local traffic flow route • Alternate routes • Emergency access routes • Background traffic accommodation • Transit accommodation 	Traffic Control Plan	<ul style="list-style-type: none"> • Freeway traffic control <ul style="list-style-type: none"> ○ Traveler information ○ Interchange operations • Street traffic control <ul style="list-style-type: none"> ○ Alternative lane operations ○ Route marker signing ○ Monitoring • Intersection traffic control <ul style="list-style-type: none"> ○ Turning movement lane balance ○ Traffic signal operations
En-route Traveler Information Plan	<ul style="list-style-type: none"> • Static signing • Changeable message signs • Highway advisory radio • Media • Other technology applications 	Traffic Surveillance Plan	<ul style="list-style-type: none"> • Closed-circuit television systems • Field observation • Aerial observation • Media reports
Traffic Incident Management and Safety Plan	<ul style="list-style-type: none"> • Crash prevention <ul style="list-style-type: none"> ○ Signing ○ Public information safety campaign • Service patrols • Traffic incident quick clearance initiatives 		

holders may utilize one to all command center types during the day-of-event. The tactical approach presented in the traffic management plan depends on what command centers are planned. A transportation management center (TMC) allows for the automation of several traffic surveillance and control tasks. Agencies dispatching a mobile command post on the day-of-event may take responsibility of developing a traffic management plan for the road system segment within their jurisdiction. In turn, the

agency: (1) coordinates critical elements of the plan (e.g., freeway to street connections) with other pertinent stakeholders during event planning team meetings, (2) formally distributes the plan during the implementation activities phase, and (3) staffs a supervisor at an interagency command post on the day-of-event. Therefore, for a single planned special event, the traffic management plan may include one plan developed by an interagency event planning team or a series of plans specific to each affected

Interagency Command Post



Mobile Agency Command Post



Transportation Management Center



Figure 6-2
Traffic Management Team Command Centers on the Day-of-Event

jurisdiction or each transportation system component (e.g., freeways, streets and intersections, and venue site).

Development Process and Integration

The following principles steer the traffic management plan development process: (1) provide a satisfactory level of service to all transportation system users, and (2) achieve balanced transportation system operations. Figure 6-3 illustrates the fundamental relationships in transportation system operations

that drive the consideration and evaluation of mitigation measures throughout this process. Characteristics of demand include volume, route of travel, and mode of travel. Transportation system characteristics include:

- Existing infrastructure (e.g., number of travel lanes, parallel roadways, etc.)
- Operational policies and regulations (e.g., scheduled transit service, traffic signal control, etc.)
- Monetary costs (e.g., parking fees, tolls, etc.)

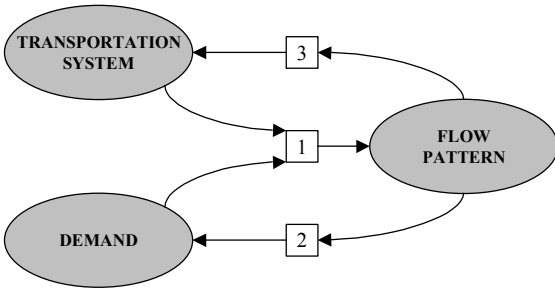


Figure 6-3
Fundamental Relationships in
Transportation System Operations

In Chapter 5, the feasibility study evaluated the flow pattern created by the transportation system and demand (relationship #1). The traffic management plan development process begins with an assessment of this flow pattern. First, practitioners should recognize that flow pattern influences travel choice and, therefore, demand (relationship #2) as long as other attractive (e.g., higher utility) travel alternatives exist. For instance, a feasibility study may identify a roadway capacity deficiency, but an effective traveler information plan can alleviate the deficiency by informing transportation system users of other, underutilized travel alternatives (e.g., alternate routes or modes). This effort achieves balanced transportation system operations by equalizing the utility of all available travel choices and may succeed in providing a satisfactory level of service for all system users.

Flow pattern also influences the transportation system (relationship #3), causing planners to implement capacity improvements or changes in transportation system operations. Simple changes include establishing temporary regulations or revising monetary charges (recouped from event organizers) to influence travel choice utility. Other infrastructure and operations mitigation measures required to manage travel for a planned special event are developed by the event planning team and specified in the traffic man-

agement plan. Such measures, when analyzed or implemented, cause a flow pattern change.

The most cost-effective and preferred set of strategies for planned special event travel management utilizes the existing transportation system infrastructure and services. This represents the recommended initial focus of the event planning team; Achieve balanced transportation system operations, then evaluate system level of service.

Planned Special Event Activity Networks

Figure 6-4 outlines the various activity networks that may serve a planned special event venue. Each activity network describes the inter-modal movements and transfer points from origin to venue destination. Integration of the traffic management plan components involves meeting the service requirements of these activity networks. For example:

- A pedestrian access plan must accommodate pedestrian trips connecting various modes of travel.
- A courtesy shuttle bus operation may service both public transit stations and satellite parking areas within the venue site area.
- Traveler information plans must account for all activity networks.
- Impacts to non-attendee transportation system users occur on the regional level, and activity network components within the site area level impact local residents and businesses near the venue.

For smaller planned special events, the event planning team may target one activity network, such as improving automobile access to designated parking areas or improving public transit usage. For larger events, the team must coordinate and achieve seamless operation among several activity networks.

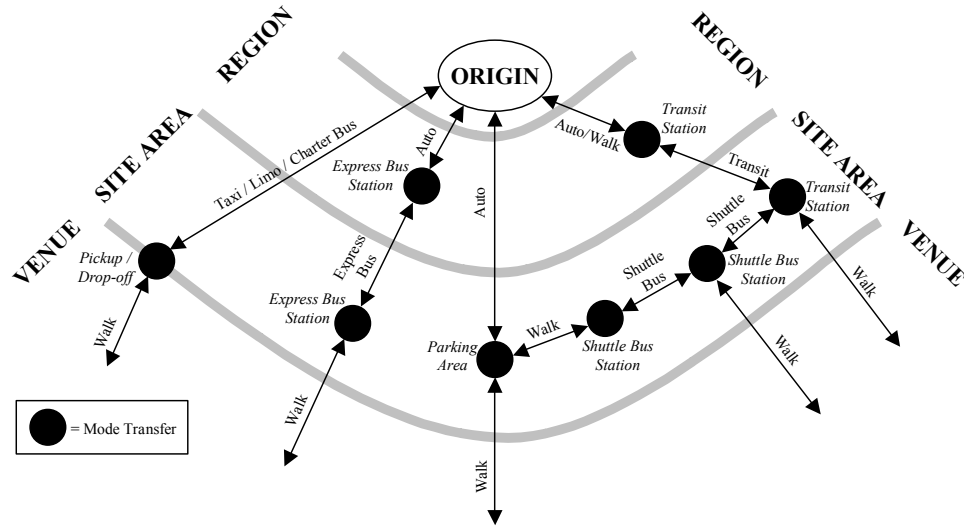


Figure 6-4
Planned Special Event Activity Networks

Special Considerations

The event planning team must create a flexible traffic management plan that accommodates modifications on the day-of-the-event as well as special considerations that surface prior to the planned special event.

Table 6-3 lists the various groups that either attend or have a direct interest in a planned special event. Throughout the traffic management plan development process, the event planning team must regularly monitor and communicate any special considerations that arise in conjunction with the needs of the groups attending the event.

Table 6-3
Groups Attending a Planned Special Event

GROUP
• Participants
• Spectators
• Event sponsor
• Dignitaries
• Media
• Non-ticketed visitors
• Street vendors

Dignitaries

Ensuring the security of dignitaries traveling to and from an event venue requires added traffic control measures and constant surveillance while a motorcade is in motion. This includes the implementation of a rolling roadblock as the motorcade traverses a planned route in addition to the use of aerial surveillance for monitoring motorcade progress and downstream traffic conditions. In fact, the transport of dignitaries represents a planned special event in itself, regardless of travel purpose. Dignitaries may not announce a visit until the last minute, well after the event planning team finalizes the event traffic management plan. Also, non-security personnel, including transportation agency officials, may not receive information on the actual dignitary arrival time or motorcade travel route until a short time before the motorcade commences travel. In turn, the event planning team must maintain special provisions within the traffic management plan, such as alternate road closures based on motorcade route, to allow a motorcade unimpeded access to its destination.

Event Participants

Event participants not only require secure transport, but maintaining their travel itinerary is of critical importance. In particular, regional/multi-venue events may require event participant transport while ingress/egress operations take place at adjacent planned special event venues. Here, stakeholders may elect to outfit vehicles used to transport participants with an Automatic Vehicle Location (AVL) system. The traffic management team can continually monitor the exact location of vehicles transporting participants and other VIPs from a TMC or command post and implement special traffic control (e.g., change traffic signals to a green indication) as needed.

Media

Media often arrives to a planned special event well before spectators and marks one of the last groups to depart the event. However, media crews may conduct broadcasts outside the event venue. Coverage of a street use event involves special accommodations as well. The event planning team should coordinate with media groups on where: (1) media trucks will park, (2) cameras positioned, and (3) cables run.

Street Vendors

Under normal day-to-day traffic operations, *side friction* generally refers to the frequency of parking maneuvers and transit stops occurring in and out of travel lanes. Street vendor activities during planned special events, shown for example in Figure 6-5, impede traffic flow as event patrons slow or stop to conduct transactions (e.g., buy event tickets or merchandise). Motorist safety becomes a concern when street vendors traverse the right-of-way of freeways and arterial roads. Elements of a traffic incident management and safety plan should

include tactics for eliminating illegal street vendor activities.



Figure 6-5
Street Vendor Activity

Contingency Planning

Contingency planning represents *event insurance*. While stakeholders may consume additional time and resources during advance planning for a planned special event, the availability of contingency plans helps mitigate a potential systemic breakdown of the transportation system during an unexpected event occurring at or near the same time as the planned special event. Key steps in contingency planning include:

- Develop a traffic management plan that is *scenario-based*. This concept applies to various plan components as well as to pertinent tactics. Each developed plan should include response actions for different unplanned scenarios. Plans and tactics may consider identical and different scenarios. A response action under one plan may warrant implementation of a contingency response described in another plan. For example, heavy rains that force the closure of a parking area triggers traveler information message changes to an alternate planned set.
- Consider and plan for a range of possible unplanned scenarios. Table 6-4 provides a contingency plan checklist for planned

special events. This checklist includes the risk scenarios presented in the previous chapter. An emergency management agency may maintain a separate emergency response plan that, if put into effect, supercedes the traffic management plan. Yet, the emergency management agency and other public safety agencies work as part of the event planning team to ensure adequate emergency access routes, pedestrian access routes, and evacuation destination areas exist to meet emergency management plan requirements.

Table 6-4
Contingency Plan Checklist

CONTINGENCY
<ul style="list-style-type: none"> • Weather <ul style="list-style-type: none"> ○ Severe weather outbreak ○ Flooding on event site access routes ○ Flooding in event parking areas ○ Parking during wet weather • Security threat • Major traffic incident • Delayed event • Event cancellation • Absence of trained personnel and volunteers on the day-of-event • Equipment breakdown • Demonstration or protest • Unruly spectator behavior • Overcrowding • Event patron violence

- Determine changes in operation due to unplanned scenarios. Aside from evacuation, the occurrence of a major traffic incident or security threat creates a multi-faceted problem for a traffic management team. This includes potential reallocation of personnel, from field crews to supervisors who must manage the unexpected event, and equipment resources. In addition, intra- and inter-agency radio communications may become deficient in servicing the unplanned event and planned special event if agencies failed to assign a dedicated

channel for planned special event only communications.

Consider the level of response to a security threat, involving a suspicious truck stopped on a freeway, that occurred during the 2002 Winter Olympics.⁽¹⁾

Early in the Games, a semi-trailer truck was stopped on the I-15 freeway, just south of downtown Salt Lake City. Because the truck did not have the legally required markings and other reasons, the Utah Highway Patrol (UHP) considered the situation to be a potential safety threat. Additional law-enforcement resources were summoned to the scene. During the entire time, the staff in transportation management center Room 230 (regional transportation management stakeholders) monitored the situation closely, viewing it with a nearby CCTV camera as well as monitoring radio reports from the UHP officers at the scene. After almost an hour passed without a resolution, staff in Room 125 (senior Utah DOT traffic engineers) began preparing to invoke the contingency plan for closing the freeway in both directions. This Action Set would have diverted all freeway traffic to parallel arterials, with the appropriate traffic management actions (new signal timing on the surface streets, changeable message sign messages on the freeway), plus traveler information actions (issuing a CommuterLink Alert, media bulletin, etc.). Fortunately, it was soon determined that the cargo in the truck was benign and the “issue” was closed in Room 230.

ANALYSIS AND MODELING



Overview

No planned special event transportation management plan, not even for a repeated

special event, can be prepared and executed without detailed planning and without modifications as the event unfolds. To be successful, the event planning team has to anticipate, and therefore plan for, all the possible scenarios that will challenge the transportation network and the mobility of the plan.

A special event transportation and implementation plan includes elements such as personnel assignments, communications from various sources, communications between multiple agencies, and guidelines for accessing and utilizing remote equipment. All of these elements are used in various manners depending upon the existing conditions, and the plan should be flexible to allow modification throughout the event. In essence, a special event plan is a plan for multiple contingencies and multiple scenarios.

Many tools and techniques are available to analyze and assess the plans. Most are scenario-based and use techniques to simulate the event to ensure that the proper resources and communication protocols are in place and are efficient. These techniques address the many contingencies, and as such, numerous plans are developed prior to the event and implemented during the event, as they are needed.

It is important to note that the assessment and development of plans do not end when the event ends. At the conclusion of the event, stakeholders comprising the event planning team and traffic management team must evaluate the plan in order to improve the plan as well as to utilize the lessons learned in future traffic management applications. Further, this evaluation process is not restricted to post-event, but instead can and should be conducted throughout the event, and modifications to the plan made *on-the-fly*.

Analysis Techniques

Planners historically have used simple planning techniques as well as high-tech computer-assisted techniques to plan and manage for planned special events. These planning techniques take many forms, ranging from traditional incident management processes and traffic engineering processes to computer modeling of scenarios.

Three primary ingredients for successful event management are: (1) proper resources, both human and non-human, (2) a good communications plan (implementation plan), and (3) a firm understanding of the transportation system's capabilities and, more importantly, its limitations. The best and most proven techniques for event operations planning are to model and test the scenarios using any and all contingencies.

Tabletop Exercises

Tabletop exercises bring all of the stakeholders together. During these exercises, scenarios are posed and escalated. These scenarios typically do not require modeled network information, as their primary purpose is to test the stakeholders as to how they would react and to fine tune the responsibilities of each stakeholder and the communications protocol between the stakeholders. Many scenarios that can cause disruptions to the event transportation are played out, and any loopholes in the operations planning are obvious to the participants. This type of exercise is supported by more detailed analyses, usually in the form of computer simulation.

Computer Traffic Simulation

In large-scale event planning, it is beneficial to understand the impact that the event will have on the existing roadway system. Where this network is complex and multiple

alternatives may exist, each will need to be evaluated. The common approach to this function is to apply tools to model the network. Capacity and LOS analyses are useful tools for gauging the expected operating conditions along roadway segments and for determining the “order-of-magnitude” changes that will result from major changes in traffic flow (e.g., as caused by a planned special event) and roadway improvements (e.g., widening, bottleneck improvements). However, improvements provided by transportation management strategies and systems are typically not reflected in such procedures. Moreover, information on performance measures (e.g., vehicle delays, fuel consumption, emissions) is not provided by capacity analysis techniques. It may therefore be worthwhile to utilize computer traffic simulation models, which can examine the manner the roadway network performs under various sets of simulated conditions.

As implied by the name, traffic simulation models examine the manner in which the roadway network performs under various sets of “simulated” conditions. They provide an excellent means of estimating changes in roadway performance metrics (e.g., average speeds, travel time, delays, emissions) resulting from increased traffic, roadway restrictions, traffic management strategies and improvements.

Traffic simulation models can be divided into the following two general classes:

- Macroscopic models are based on deterministic relationships between roadway and intersection characteristics and traffic flow. Examples include TRANSYT-7F, FREQ, and the TRAF suite of models.
- Microscopic models simulate the movement of individual vehicles through the

network being modeled. Examples include INTEGRATION, Paramics, Synchro/SimTraffic, and the TSIS suite of models.

Some simulation models are designed for analysis of individual intersections or specific types of facilities, while others are designed for network-level analysis. Models capable of network-level analysis include TRANSYT-7F, Synchro/SimTraffic, INTEGRATION, and Paramics. The TSIS (Traffic Software Integrated System) set of models includes NETSIM for network analysis, FRESIM for freeway analysis, and CORSIM, which is an integrated package of the network and freeway models. The TRAF set of models includes NETFLO for network analysis, FREFLO for freeway analysis, and an integrated package (CORFLO) of the network and freeway models. FREQ simulates corridor traffic operations including one freeway and one parallel arterial.

The individual models vary in their capabilities, limitations, and ease of use (a discussion of which is beyond the scope of this Handbook). A significant amount of effort generally is required to learn to use traffic simulation models, including setting up the appropriate inputs and parameters. A significant amount of effort may also be required to obtain traffic and network data to conduct the analysis and to calibrate the model to local conditions. Data requirements are proportional to the extent of the network being modeled. The required data can include characteristics of each link (e.g., length, number of lanes, auxiliary / HOV lanes, ramps, grade, speed limits, lane widths, pavement condition), link traffic flow information (e.g., entering / exiting volumes, ramp volumes, travel times, percent heavy vehicles and buses, lane changing characteristics) and other types of information such as detector locations, incident characteristics (e.g., effect of lane blockage on capacity), and ramp metering operations.

Simulation models generally require a non-trivial analysis effort. Moreover, any model-specific limitations should be taken into consideration when interpreting the outputs of simulation. Sensitivity analyses are important to developing an understanding of: (1) how reasonable the simulation estimates are and (2) how much confidence the analyst should place in them.

SITE ACCESS AND PARKING PLAN

Overview

Chapter 5 detailed steps for conducting a parking demand analysis, including guidelines for evaluating the scope of parking area required to serve event patrons. In turn, a site access and parking plan contains operations strategies for managing automobile, bus, taxi, and limousine traffic destined to and from the following areas in the vicinity of a planned special event venue: (1) public parking area, (2) reserved (permit) parking area, (3) overflow parking area, and (4) pick-up/drop-off area. The event planning team must create a flexible plan that contains proactive strategies for responding to real-time event patron travel patterns driven by their choice of public parking areas, especially if parking fees vary from lot to lot. Traffic destined to the three other site areas has a fixed ingress and egress pattern as specified in the plan through lot assignments and permitted movements.

The site access and parking plan must fit seamlessly into other components of the traffic management plan. This includes the pedestrian access plan, traffic flow plan, and traffic control plan. For instance, the pedestrian access plan must accommodate pedestrians arriving to/from each parking area or pick-up/drop-off point while still achieving

a manageable dispersion of pedestrian traffic. Parking area access and site circulation arrangements must correlate with street traffic control schemes.

Site access and parking plan development involves a three-step process: (1) access, (2) process, and (3) park:

- Access refers to getting event traffic from the adjacent street system to their destination, such as a parking area or pick-up/drop-off area, during ingress and vice versa during egress. The traffic management team manages the access operations component.
- Process involves activities necessary to “approve” vehicles for entry into a parking area. A fee transaction between a parking area operator and motorist represents a common process activity.
- Park involves handling vehicles from a process point to a parking space. A parking team and associated volunteers operate the process and park components. A breakdown in any one of the three components can result in congestion extending to the adjacent street system and possibly to freeway and arterial corridors serving the planned special event.

Parking Policies and Tactics

General Considerations

Table 6-5 presents three general considerations regarding proactive parking management for planned special events.

Table 6-5
General Parking Management
Considerations

CONSIDERATION
• Lot assignment
• Traveler information
• Contingency plans

Lot Assignment

The objectives of lot assignment include:

- Efficiently distribute the flow of traffic.
- Minimize the superimposition of traffic flow on a single access road section.
- Separate pedestrian, automobile, and bus/taxi/limo traffic.
- Accommodate group needs.

Table 6-6 lists the factors that influence this planning process. Key considerations for some of these factors include:

- Parking areas designated for disabled, reserved, and valet parking require on-site spaces with easy access to the event venue. However, the location of these lots must afford users the opportunity to egress immediately after the event without intersecting extreme levels of pedestrian traffic.
- Some planned special events draw a significant level of event patrons traveling in a recreational vehicle. These patrons typically arrive well before the event start, if not one day prior to the event, and tailgate after the event. As a result, a recreational vehicle parking area should exist adjacent to streets segments that the traffic management team may temporally close after the event to safely accommodate pedestrian traffic. This consideration also applies to the selection of media and participant parking areas. These groups arrive before and depart after the majority of event patrons and require parking near the venue, especially media who have to transport heavy equipment.
- For major special events, employees should park at a remote off-site lot with shuttle bus service.
- The section on site access and circulation will discuss taxi and limo operations.

- In evaluating parking areas for heavy vehicles (e.g., buses and recreational vehicles), the event planning team must verify that vehicles can execute all required turning movements during ingress and egress.
- If the use of any parking area requires a lease or third-party agreement (e.g., use of a commercial lot), then planners must have the agreement signed well before the day-of-event.

Table 6-6
Factors Influencing Lot Assignment

FACTOR
<ul style="list-style-type: none"> • On-site parking location • Off-site parking location • Disabled parking • Reserved (VIP/permit) parking • Participant parking • Valet parking • Media parking • Employee parking • Bus parking • Recreational vehicle parking • Taxi/limo staging

Traveler Information

Dissemination of traveler information on site access and parking utilizes several tools and approaches, including pre-trip and en-route:

- As part of pre-trip information dissemination, the event planning team should prepare a site and parking plan for stakeholder use and for distribution to event patrons via advertisements as well as the event or venue website. The event operator should include directions to specific parking areas with pre-event ticket and parking pass distribution.
- En-route information dissemination techniques begin with any combination of static signs, portable changeable message signs (CMS), and highway advisory radio (HAR) positioned on freeway and arterial corridors serving the event. Fig-

Figure 6-6 shows a freeway CMS, operated by the Maryland State Highway Administration with real-time sign status posted on the Coordinated Highways Action Response Team (CHART) website, displaying access information for different parking areas.

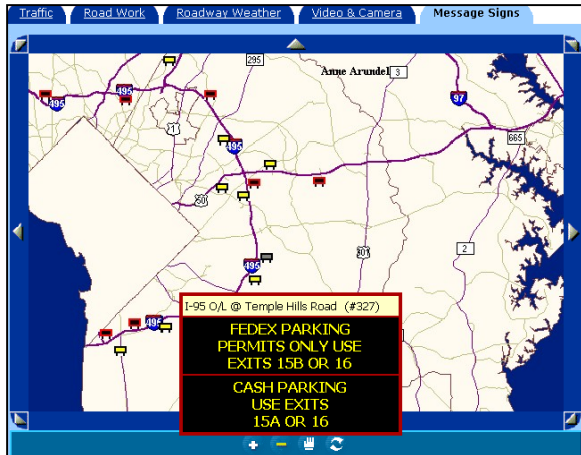


Figure 6-6
Freeway CMS Displaying Parking Information (Graphic courtesy of the Maryland State Highway Administration.)

- As part of developing the site access and parking plan, the event planning team should prepare a signing plan and CMS/HAR message sets.
 - Default messages provide directions to assigned parking areas.
 - Stakeholders should maintain alternate message sets to divert traffic away from full lots to overflow parking areas.
 - Implementation of alternate message sets places a premium on interagency communications.
- On the day-of-event, the command post must process real-time information received from parking area operators and observers and, in turn, immediately communicate recommended changes to all agencies managing traveler information devices as the situation dictates.
- The signing plan indicates a network of trailblazer and guide signs from a free-

way or arterial access point to various parking areas.

- Top priority involves guiding event patrons and participants destined to reserved parking areas. Unlike most event patrons who will eventually accept any public parking area, travelers possessing a permit will circulate through the street system adjacent to the event venue until they encounter their designated parking area.
- Figure 6-7 shows a temporary guide sign for event parking permit holders.



Figure 6-7
Guide Sign for Reserved Parking Areas

- Traveler information considerations during event egress include the provision of parking area identification landmarks, and guide signs to major freeway/arterial routes at parking area exit points and adjacent access roadways.
 - In the absence of parking staff, the guide signs assist motorists unfamiliar with the area in making critical turns to access known freeways and/or arterials when departing the event venue site.
 - Missed turns result in additional circulation through the site area and impacts street network operations during egress.
- Standard parking area identification landmarks at permanent venues include fixing a parking section banner to light posts or naming different levels of a

parking garage. The lack of such permanent identification landmarks at unpaved parking areas can create significant pedestrian/vehicular conflicts, not to mention added delay for the event patron, as pedestrians scan the parking area for their vehicle.

- Figure 6-8 shows an innovative parking area identification technique applied to unpaved parking areas, which represented a golf course, at the Rose Bowl. The technique involved attaching a numbered balloon to portable lighting trailers stationed at various unpaved parking areas. Some balloons were visible from inside the stadium.



Figure 6-8
Temporary Parking Area Identification
Landmark

Contingency Plans

Contingency planning involves the development of traveler information message sets to divert and guide event ingress traffic to overflow parking areas:

- If unpaved parking areas are used, the traffic management team should have a contingency plan when wet weather prevents the use of unpaved lots. This includes using other paved areas, particularly lots serving an inactive land use or one adversely affected by wet weather

such as a park, and/or allowing on-street parking.

Technology Applications

Technology utilized for day-to-day traffic management can greatly enhance parking management and efficiency of operation at permanent venues that serve numerous planned special events. In particular, use of technology can improve operator monitoring of parking areas and facilitate accurate, up-to-date dissemination of traveler information.

Advanced Parking Management System

A basic advanced parking management system allows operators, stationed at a transportation management center, to monitor parking areas and control traveler information devices used to disseminate parking information. Key considerations include:

- Advanced systems include electronic detection equipment that transmits real-time traffic volume counts and speeds to the TMC.
- The system surveillance and monitoring system incorporates pan-tilt closed-circuit television (CCTV) cameras for viewing parking areas and adjacent access roads.
- Traveler information devices include a CMS and HAR network coupled with strategically positioned blank-out signs that communicate parking area status information (e.g., lot full) to motorists.
- With real-time access to CCTV, TMC traffic signal system operators can implement timing modifications on demand.
- Operators at the TMC can integrate the advanced parking management system into the greater Advanced Traveler Information System for the region (e.g.,

automated information transmission to other agencies, websites, and kiosks).

Advanced Parking Information System

The deployment of advanced parking information systems have successfully occurred at some airports and metropolitan areas across the Nation. This system automatically disseminates accurate, up-to-date information regarding parking facility occupancy status to motorists upstream of the facility, coupled with routing directions to open facilities. From the perspective of planned special events, the system would function well for an event venue served by several parking facilities, such as one located in a downtown area. Electronic signs controlled by the system inform motorists of open parking facilities as soon as they exit the freeway system.

An advanced parking information system generally consists of the following four components: (1) vehicle detectors, (2) a parking control center, (3) information displays, and (4) a telecommunications network. Automated detection methods include inductive loop, ultrasonic, infrared, microwave, and machine vision, although studies have shown infrared detection functions best for advanced parking information systems. The parking control center receives and synthesizes data collected by detectors, and the center transmits messages pertaining to parking facility occupancy to information displays for motorists' use. Operators at the parking control center can override the system during planned special events or unusual circumstances. Information displays include a combination of static and dynamic signs disseminating parking availability information and directions to open facilities. The system can incorporate other traveler information devices, such as HAR, the Internet, telephones, commercial television, and in-vehicle navigation.⁽²⁾

The Minnesota DOT, Federal Highway Administration (FHWA), City of Saint Paul Department of Planning and Economic Development, City of Saint Paul Department of Public Works, and one private partner conducted a one-year Saint Paul Advanced Parking Information System Operational Test for planned special events in the area.⁽³⁾ The stakeholders performed the test in the Civic Center/Rice Park area of downtown Saint Paul, and the test consisted of the following:

- Determination of parking stall occupancy by participating parking operators during planned special events in downtown Saint Paul and instantaneous transmission of available parking to the Saint Paul Traffic Control Center (TCC).
- Instantaneous transmission of information on available parking by the Saint Paul TCC to electronic message signs.
- Wireless, automated parking advisory signs placed at appropriate locations to display the number of stalls available at parking garages or lots with direction arrows to the garages or lots.

Table 6-7 summarizes some key findings yielded by the operational test.

Vehicle Access and Circulation

In order to facilitate safe and quick spectator and participant travel to/from the event site, the site access and parking plan should specify tactics that prevent potential congestion on parking area access roads and allow for good circulation on roadways surrounding the event site. Table 6-8 indicates site access and circulation considerations applicable to the development of a site access and parking plan. The three considerations of: (1) parking area ingress, (2) pick-ups and drop-offs, and (3) parking area egress are discussed in the following subsections.

Table 6-7
Key Findings from Saint Paul Advanced
Parking Information System Operational
Test⁽³⁾

FINDING
<ul style="list-style-type: none"> • Advanced Parking is perceived beneficial to the participating parking operators and the city of Saint Paul. • Most motorists responding to a mail-back survey thought the system has value. • There were some improvements on the surface transportation system, but the improvements could not be attributed directly to Advanced Parking. • Advanced Parking signs with full matrix displays have sufficient capabilities to support other traffic functions in downtown Saint Paul; Advanced Parking counter signs alone do not have sufficient capabilities. • There were no institutional, legal, or other private sector issues, which had a significant effect on the operational test. • Advanced Parking is transferable to other cities without significant modification.

The reader should review:

- Select street and intersection control tactics (e.g., alternative lane operations, turning movement lane balance, traffic signal operations) described in the “Traffic Control Plan” section of this chapter warrant review for possible mitigation of site circulation deficiencies.

- Traffic flow plan, traffic control plan, and parking area design provisions that impact the scope of mitigation required to provide adequate site access and circulation.

Parking Area Ingress

During event ingress operation, several factors influence the operation of access roads connecting the adjacent street system and parking areas:

- While the physical characteristics of the adjacent street system and associated traffic control may meter traffic flow destined to access roadways, the roads likely do not have sufficient capacity to service incoming traffic. As a result, the event planning team should designate contraflow (e.g., one-way) operation on the access road segment connecting a major feeder intersection and the relevant parking area. An advantage of implementing access road contraflow operation concerns the capability of handling two or more conflicting movements from a feeder intersection with proper channelization. In turn, the design of parking area access points should ensure accommodation of vehicles in all travel lanes.

Table 6-8
Site Access and Circulation Considerations

CONSIDERATION	TACTIC
Parking area ingress	<ul style="list-style-type: none"> • Right turn circulation pattern • Contraflow operation • Shoulder utilization • Lane channelization • Parking area overflow access points
Pick-ups and drop-offs	<ul style="list-style-type: none"> • Use of off-street areas • Designation of pick-up/drop-off areas to avoid conflict with primary traffic ingress/egress routes • Storage area
Parking area egress	<ul style="list-style-type: none"> • Right turn circulation pattern • Preservation of adjacent street flow • Provision of rapid parking area unloading

- Shown in Figure 6-9, shoulder utilization represents another strategy to gain additional access road capacity. As indicated in the figure, the temporary right shoulder lane services through traffic, and the inside lane provides direct access to a parking area.



Figure 6-9
Shoulder Utilization

- Figure 6-10 shows an example of lane channelization implemented on an access road serving venue parking areas. This control technique eliminates unnecessary lane changing, which reduces roadway capacity, in the vicinity of parking area access points. Advance signing can inform motorists on which lane to use.



Figure 6-10
Lane Channelization

- The use of multiple access points to the same parking area provides an opportunity where vehicles traversing the left lane must enter the first access point and vehicles traversing the right lane has access to remaining downstream access points (e.g., left lane becomes exclusive lane to the next downstream access point).
- A breakdown in either parking area process or park operations creates congestion on the access roadway serving the parking area. This is not a “lot full” situation but, instead, a situation characterized by excessive service time to conduct parking fee transactions or to park vehicles. If parking operators do not mitigate the breakdown quickly, congestion on the access road propagates to the adjacent street system. The use of overflow access points and on-call operators/volunteers can effectively limit and even reduce congestion until parking area operations return to normal.

Pick-ups and Drop-offs

Table 6-9 lists guidelines for designating pick-up and drop-off areas. Some considerations include:

Table 6-9
Guidelines for Designating Pick-up and Drop-off Areas

GUIDELINE
<ul style="list-style-type: none"> • Utilize off-street areas for private vehicles, taxis, limousines, and buses. • Select areas that do not require vehicles to <i>intersect</i> heavy traffic flow to/from parking areas or pedestrian access routes. • Designate separate areas for different vehicle classes. • Ensure adequate space exists within the off-street area to accommodate vehicle storage and turnaround.

- A site vehicle circulation rule of thumb involves implementing a right turn pat-

tern of ingress and egress to achieve maximum street system capacity. The quandary with pick-ups and drop-offs concerns accommodating *two-way* vehicle travel, departing traffic during event ingress and arriving traffic during event egress.

- First, recognize these motorists will encounter resistance only in exiting the immediate site area during ingress and vice versa during egress. They likely will travel in the opposite direction of peak flow on freeway and arterial corridors serving the event venue.
- Second, vehicles may have to turn-around after a pick-up/drop-off.
- The utilization of off-street parking areas for taxi and limousine event service eliminates taxi/limo cruising at the end of a planned special event. For example, limousine drivers would have to meet their customers after the event and escort them back to the parked limousine. This strategy has proven successful at reducing pedestrian/limousine conflicts at intersections near the Staples Center in Los Angeles, CA.⁽⁴⁾
- For private vehicles, an off-street lot provides a convenient meeting location.
- Pick-up and drop-off area capacity represents another key concern that practitioners must address.
- A queuing system, discussed in the next section on parking area design and operation, can describe the operation of pick-up/drop-off areas for taxis and drop-off areas for private automobiles, limousines, and buses.
- In the case of pick-ups involving private automobiles, limousines, and buses, the event planning team must designate an off-site parking area of sufficient capacity, as determined through a parking demand analysis, to stage vehicles operated by drivers intending to pick-up a specific event patron(s). In an effort to avoid

conflict with heavy egress traffic, or as a client courtesy, drivers typically arrive at a designated pick-up area before the end of the event.

- Practitioners can estimate and compare the service rate (vehicles per hour) of all lanes comprising a particular pick-up/drop-off area to the peak arrival rate of traffic using the area. The service flow rate for one lane equals one hour divided by the time to process (i.e., service time) one vehicle picking-up/dropping-off event patrons. If an average pick-up/drop-off service time is two minutes, then the service rate of one lane equals 30 vehicles per hour (60 minutes divided by 2 minutes per vehicle).
 - Personnel assigned to monitor pick-up/drop-off area operation on the day-of-event can enforce a particular service time or length of time a particular vehicle can stay in the pick-up/drop-off area.
- Note that a pick-up/drop-off area queuing system operates stochastically. Traffic arrival rates will vary, and individual service times that collectively determine the service rate will also vary.
- To handle a potential overflow situation at a pick-up/drop-off area, prohibit parking on the access road adjacent to the pick-up/drop-off area, and cone (when necessary) a vehicle stacking lane along the access road shoulder.

Parking Area Egress

Two basic strategies surround parking area egress operations. These contrasting strategies include: (1) preserving adjacent street flow and (2) effecting rapid parking area unloading. Several important considerations include:

- Regardless of strategy, planners should locate parking area access points as far

away as possible from major intersections so that vehicles can exit immediately from the parking areas without disrupting the flow of traffic on the adjacent access road.

- When the adjacent street represents a collector or arterial roadway, the traffic management team generally seeks to preserve flow. This is accomplished either by manual or automated means. A manual operations approach involves traffic management team personnel monitoring parking exit points. Crews permit a maximum volume of traffic to exit the parking areas while still maintaining a smooth traffic flow on the adjacent roadway network. If traffic begins to queue downstream of an exit point, personnel would communicate via radio and movement out of the relevant parking areas stopped until mainline congestion dissipates.
 - This strategy worked successfully during two major rural events, the 1986 and 1995 U.S. Golf Open at Shinnecock Hills Golf Course in Southampton, New York.⁽⁵⁾
 - Instead of manually controlling traffic, traffic management team personnel could operate portable traffic signals placed at parking area access points.
 - If access points have a permanent traffic signal, operators can simply implement new timing plans in favor of either egress strategy.
- To effect rapid parking area unloading, consider providing multiple access points for each parking area.
 - For planning purposes, practitioners may either assume an access point capacity of 900 vehicles per hour per lane (e.g., 4 second headway between vehicles) or use computer traffic simulation software to gain a more precise estimate based on local conditions.

- An alternate approach involves temporarily striping additional exit lanes, for a nominal distance (e.g., 1000+ feet) plus taper, on the adjacent access road to allow for multiple lanes of traffic out of the parking area. Figure 6-11 illustrates this strategy, implemented for a county fair in rural Dutchess County, New York. This approach works well when the parking area access point is centrally located and accommodates traffic from opposite ends of the parking area.



Figure 6-11
Access Road Traffic Pattern During Event Egress⁽⁶⁾

Parking Area Design and Operation

Parking area operations consist of two distinct components: process and park. A significant breakdown in either component will, in turn, cause congestion to occur and propagate on the access road serving the parking area. The objective of designing and operating parking areas involves providing an access point capacity in excess of the peak rate of traffic flow that traverses the driveway.

Process Component

Any planned special event parking area that requires a fee or permit for access has a service facility in-place to process vehicles entering the lot. Therefore, a first-in-first-out queuing system exists. Figure 6-12 provides a schematic of this system. The queuing system is bounded by the service facility (e.g., parking area gate) and the queue storage area. Figure 6-13 illustrates a queuing system at the entrance of a venue parking area. From a parking area operations perspective, queuing system characteristics include:

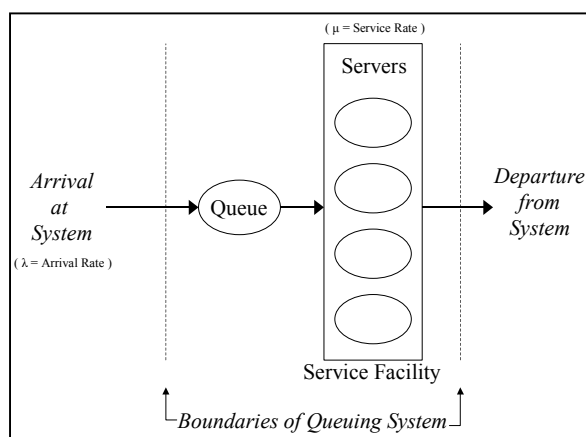


Figure 6-12
Queuing System Schematic



Figure 6-13
Permanent Venue Gate and Queue Storage Lanes

- The arrival rate, λ , denotes the number of vehicles traversing a single parking area access point over some period of time.

- The maximum arrival rate represents the lesser of: (1) access point capacity or (2) adjacent access road capacity.
- The service rate, μ , is the number of vehicles the service facility can process over some period of time. The magnitude of this rate depends on the number of servers (e.g., staff or automated gates) that comprise the service facility and server efficiency.
- Queuing happens when the arrival rate exceeds the service rate. For example, if the maximum arrival rate is 600 vehicles per hour and four parking area gates are open, then each server or staff person must process 150 vehicles per hour, or 1 vehicle in 24 seconds (e.g., the service time), in order to prevent vehicle queues from forming. Motorists will locate open servers, but the event planning team should utilize the queuing system concept, and consider predicted arrival rates, when staffing parking area access points.
- A parking area queuing system operates stochastically. Traffic arrival rates will vary, and individual transaction times that collectively determine the service rate will also vary.
- In designing a service facility for a planned special event parking area, select a conservative server service time (e.g., the time to serve one vehicle) and determine the required number of servers that can process the maximum anticipated arrival rate with one server on break.
- Service time may increase if law enforcement conducts random checks of vehicles entering a parking area.
- To avoid the occurrence of long service times, designate a turnout area adjacent to the gates for vehicles subject to a detailed security check.

Table 6-10 indicates three vehicle processing tactics.

Table 6-10
Vehicle Processing Tactics at Parking Area

TACTIC
<ul style="list-style-type: none"> • Manual transaction • Permit display • Automated transaction

Manual Transaction

Manual transaction refers to cash transactions made between a driver and human server. This tactic involves the longest and most variable service times, as servers have to periodically make change and even answer questions.

Manual transaction operation at parking areas closely resembles the operation of manual (cash) lanes at toll facilities. In both cases, signs inform drivers of the fee in advance of the service facility, and servers conduct cash-only transactions. Numerous publications on toll facility evaluation report the capacity of a manual toll lane ranges from 300 to 400 vehicles per hour. This equates to a service time of between 9 to 12 seconds per vehicle. Practitioners may assume a service time in the stated range, where 12 seconds per vehicle denotes a conservative service time, for individual servers handling cash transactions at a planned special event parking area.

Permit Display

The use of permits for planned special event parking has become increasingly common. Originally, permanent venue or recurring event season ticket holders received or purchased a parking permit as part of their season ticket package. Internet commerce has spurred venues and event organizers to sell reserved parking spaces in advance to event patrons. Typical offers involve obtaining a guaranteed parking space near the venue and main gate.

Advance parking sales provide a two-fold advantage from a parking operations perspective. First, event patrons will have advance information on exactly where to park at the event venue, and repeat customers will become familiar with the fastest route to the parking area. Second, the tactic eliminates cash transactions at reserved parking areas on the day-of-event, substantially reducing service time. In fact, a service facility is unnecessary if parking operators post proper signage and conduct a vehicle check for violators between event ingress and egress.

The operation of a permit-only parking area mirrors that of a free parking area. In determining the capacity of individual access lanes to a free or permit-only parking area, practitioners may assume a 4 second headway between vehicles (or 900 vehicles per hour per lane capacity). This represents the capacity assumption made by officials, during the planning process, for free parking areas used by spectators of the 2002 Winter Olympics.⁽⁷⁾ In order to account for roadway geometrics or special turning maneuvers, practitioners can determine the capacity of access lanes using computer traffic simulation software.

Automated Transaction

An automated transaction involves deployment of an electronic fee collection system, suitable for permanent venues hosting numerous events. Similar in operation to an electronic toll collection system, the system would require event patrons to have a transponder in their vehicle. Implementation of a small-scale system could involve distributing transponders to season ticket holders.

Park Component

Parking operators and volunteers must meet the following two requirements for parking vehicles:

- Park vehicles at the same rate as those being processed.
- Minimize pedestrian/vehicular conflicts inside parking areas.

When multiple servers process vehicles, operators should consider creating multiple vehicle streams from the service facility and, in turn, parking vehicles in different sections of the parking area. Each stream must maintain an adequate speed or congestion will occur within the parking area and spillback to the service facility. Prior to the event, parking operators should survey the parking area and note any features that may slow vehicles traversing a parking area. Such features include ditches, sand, and humps.

Figure 6-14 shows an excellent example of minimizing pedestrian/vehicular conflicts inside a parking area. Simply ensure that every vehicle entering a parking area parks as close to the adjacent pedestrian access route, leading to the venue or shuttle bus station, as possible. Erect pedestrian walkway signs and instruct volunteers to tell event patrons where to walk as soon as patrons exit their vehicle.



Figure 6-14
Minimizing Pedestrian/Vehicular Conflicts
in Parking Areas

Parking Occupancy Monitoring

On the day-of-event, traffic patterns and parking area loading patterns may vary from

event planning team predictions. As a result, some parking areas, particularly non-reserved lots, may load faster than other lots. The event planning team and traffic management team must, in advance of the event, develop a detail for monitoring parking area occupancy levels for the ingress period. The focus of this task involves making a “lot full” decision at a time when all vehicles between the parking area access point and traveler information devices directing motorists to the parking area (e.g., the *pipeline*) can still park at the subject lot. As soon as team personnel make a “lot full” call, TMC or command post operators change the message set communicated by traveler information devices in order to direct motorists to an alternate lot. The traveler information device(s) forming the upstream boundary of the pipeline must be located upstream of the access road serving an alternate parking area. In some cases, a parking area pipeline may extend to a freeway or arterial corridor serving the event venue.

Two methods for making a “lot full” decision in the field include: (1) vehicle count at parking area access points and (2) visual inspection. Both methods require field personnel to have an estimate of the pipeline capacity during load-in. That is, the defined pipeline length (account for multiple travel lanes) divided by average vehicle spacing. Consider that up until the parking area reaches capacity, vehicles traversing the pipeline will be *moving*. Therefore, average vehicle spacing equals vehicle length plus the space allotted by drivers between vehicles. Average vehicle spacing ranges from 30 feet (conservative) to 40 feet.

The vehicle count method involves conducting a manual or machine count at the downstream pipeline end beginning at the start of parking area load-in. This count represents the number of vehicles that have entered the parking lot. The following equation defines a “lot full” decision:

$(Capacity\ of\ parking\ area) - (Vehicle\ count) - (Pipeline\ capacity) = 0\ (Lot\ full)$

The visual inspection method involves the traffic management team or parking operators making a “lot full” decision based on comparing a visual estimate of available parking spaces to the pipeline capacity. The parking area access point(s) must denote the downstream pipeline terminus. Team personnel can obtain an estimate of available parking spaces on the ground, from an overhead vantage point, or from aerial observation. This method is not as precise as the vehicle count method, but the visual inspection method: (1) requires less personnel resources and (2) can be implemented in the latter stages of load-in, as necessary to assess conditions.

Table 6-11 summarizes the parking occupancy monitoring plan used during the 2002 Winter Olympics.

Table 6-11
2002 Winter Olympics Parking Occupancy Monitoring Plan⁽¹⁾

STEP
<ul style="list-style-type: none"> • The observers at each lot reported hourly to the TMC command post on the percent of lot capacity in use. • The status of all lots was tracked by the TMC command post. • As any lot approached capacity, a backup lot was identified by the TMC command post. • For each lot and backup lot, the upstream CMS locations were identified. • Diversion messages were posted by the TMC at those CMS locations. • Approaching motorists saw the CMS instructions and diverted to the new lot.

Parking Regulations

Planned special events require law enforcement and other stakeholders to consider various on-street and off-street parking regulations. On-street parking regulations involve day-of-event parking restrictions, as

illustrated in Figure 6-15, to: (1) preserve parking for nearby residents and businesses and (2) increase capacity on critical access routes serving the planned special event. Table 6-12 lists some considerations for developing off-street parking regulations.



Figure 6-15
Parking Restriction Signs

Table 6-12
Off-street Parking Regulation Considerations

CONSIDERATION
<ul style="list-style-type: none"> • Parking area opening and closing time • Parking on grass adjacent to paved areas • Parking on islands, medians, and berms • Parking on the access road shoulder • Private parking area regulations regarding the obstruction of traffic flow • Obstruction of pedestrian access routes (e.g., sidewalks) • Tailgating: <ul style="list-style-type: none"> ○ Occupy one parking space only ○ Saving of parking spaces ○ Blocking of aisles

Practitioners should assess the use of private land (residential or business) for event patron parking. Owners entice arriving event patrons to use private parking areas by offering a reduced fee relative to event parking areas, or drivers recognize the convenience of the lot location with respect to accessing a freeway or arterial corridor needed to exit the area during egress. Problems may occur particularly during event egress when a continuous stream of traffic exiting a private

lot(s) conflicts with heavy adjacent street traffic attempting to exit the local area surrounding the event site. Congestion on the adjacent street creates congestion that propagates upstream and toward the event site area. Solutions to mitigate the potential impact of private parking areas on adjacent street traffic flow during event ingress and egress include: (1) requiring owners of private land to obtain a permit to offer parking for a fee during a planned special event and (2) staffing traffic control officers at private driveways during egress to meter traffic flow out of the private parking area.

Three keys to successfully implementing a parking regulation include enforcement, advertising, and signing. Enforcement involves both ticketing and towing. Tow trucks assigned to the planned special event venue site can facilitate immediate removal of illegally parked vehicles. Prior to the event, the event planning team could designate an on-site area to serve as a repository for towed vehicles. Event patrons could access the area on foot and then would have to pay a towing charge to retrieve their vehicle.

The event planning team should inform affected local residents and businesses of parking restrictions via direct contact or mailing. To better meet community needs, stakeholders can setup a telephone hotline during the planned special event to field any complaints. This tactic assists law enforcement in identifying areas requiring greater enforcement. For multi-day events, law enforcement can base second-day enforcement patrols on first-day public comments.

Plan Specifications

The event planning team should design a site and parking plan to service both the traffic management team and event patrons. Pre-trip traveler information dissemination (via media, websites, mailings, brochures)

should include elements of the site and parking plan. Table 6-13 contains a site and parking plan development checklist. Appendix H contains example site and parking maps prepared for permanent venues.

Event patrons primarily focus on information specifying time of operation, location, and cost. These elements define the utility associated with choosing a particular parking area or electing to drive to the event site altogether. As shown in Figure 6-16, the distribution of an annotated aerial map benefits event patrons unfamiliar with the immediate venue area. Figure 6-17 shows a downtown arena parking map that displays parking fees for various off-site parking areas within sufficient walking distance from the venue. Table 6-14 lists considerations for posting any planned special event plan on an Internet website.

PEDESTRIAN ACCESS PLAN

Overview

A pedestrian access plan provides for the safe and efficient movement of pedestrians within the immediate area of the venue. This includes accommodating pedestrian trips to/from several mode transfer points in a planned special event activity network. These points, shown for example in Figure 6-18, include site parking areas, transit stations, express/charter bus stations, shuttle bus stations, and pick-up/drop-off areas. Moreover, some event patrons may make their entire trip, originating from home or work, on foot. In meeting the managing travel for planned special events goal of *ensuring safety*, the event planning team must develop a plan that: (1) accommodates pedestrians accessing an event via a network of safe walking routes and (2) minimizes pedestrian/vehicular conflicts.

Table 6-13
Site and Parking Plan Checklist

ELEMENT	PROVISION
Event patron parking areas	<ul style="list-style-type: none"> • Highlight free, pay (state rates), and reserved (permit) parking areas. • Indicate lots where tailgating is permitted. • Show specific parking area access points and state restrictions. • Indicate number of entrance/exit lanes (or servers) at each access point. • Designate lots by a number or letter and provide lot-specific directions. • State time parking areas open, particularly if time varies by parking area. • Discuss features of each parking area (e.g., paved, staffed, lighting, security). • State estimated walking time from each parking area. • Indicate connecting pedestrian access routes. • Show overflow parking areas, state distance from venue, and indicate criteria for operation (e.g., sell-out). • Indicate parking areas for motorcycles. • Indicate parking areas for recreational vehicles (e.g., overnight parking). • Furnish map of available off-site parking areas. <ul style="list-style-type: none"> ○ Include information on street regulations (e.g., one- or two-way) and connections to freeways and major arterials. ○ State on-street parking restrictions. ○ Specify private parking area regulations (e.g., egress control). ○ Indicate location of entrance/exit points to off-street parking areas. ○ Include rates if available. ○ Show restricted off-site parking areas (e.g., residential neighborhoods, etc.)
Gate access information	<ul style="list-style-type: none"> • Indicate gate names as shown on event patron tickets.
VIP information	<ul style="list-style-type: none"> • Show VIP (e.g., official guest / sponsor) parking areas. • Show credential pick-up location. • Show hospitality areas.
Shuttle bus route and stations	<ul style="list-style-type: none"> • Display shuttle route and all stations. • State cost, and emphasize free services.
Drop-off / pick-up sites	<ul style="list-style-type: none"> • Show access points and circulation lanes for transit/taxi/limo/shuttle service. • Show exclusive bus lanes. • Show transit / express bus stations. • Indicate general drop-off / pick-up sites where turnaround is permitted. • Indicate valet parking drop-off. • Show disabled drop-off / pick-up site.
Other parking areas	<ul style="list-style-type: none"> • Show express/charter bus parking area. • Show limousine parking area. • Show media parking area. • Show venue employee parking area.
Disabled parking areas	<ul style="list-style-type: none"> • State specific location (e.g., first row) of disabled-only spaces in general parking areas. • Indicate number of spaces available.
Other considerations	<ul style="list-style-type: none"> • Show aerial map. • Promote advance purchase (permit) options. • Indicate towed vehicle (e.g., illegally parked) pick-up area. • Emphasize new provisions (e.g., new parking areas, etc.). • Present map in grid format for easy reference. • Prepare maps for different venue events if parking plan varies. • Draw map to scale. • Show private property. • Display landmarks. • Indicate municipal fireworks viewing areas.



Figure 6-16
Annotated Aerial Map of Venue Site (Photo courtesy of the Pepsi Center.)



Figure 6-17
Downtown Area Venue Parking Map (Graphic courtesy of the Conseco Fieldhouse)

Table 6-14
Considerations for Posting Plans on an Internet Website

CONSIDERATION
<ul style="list-style-type: none"> Recognize detailed plans and maps may be difficult to read, especially when compressed for easy downloading. Create an interactive plan to better present detailed information contained in the plan. Allow users to access information on specific entities via hyperlinks embedded in the plan. Provide a black and white version of plans for event patrons to download and print. Provide text directions to support plans. Provide maps and directions based on point of origin (e.g., city or roadway).



Figure 6-18
Mode Transfer Point

As with planned special event travel demand, peak event-generated pedestrian demand rates vary by event category:

- A discrete/recurring event at a permanent venue is characterized by high peak pedestrian arrival and departure rates. Maximum pedestrian demand occurs after the end of a discrete event, and the high demand level meters pedestrian flow to event parking areas and transit/shuttle stations, thus metering vehicle departures from the venue area.
- High attendance at continuous events and street use events yields high pedes-

trian traffic traversing the adjacent street system for a sustained period of time.

Existing pedestrian facilities, namely sidewalks and crosswalks as illustrated in Figure 6-19, can not adequately accommodate pedestrian traffic in the vicinity of a planned special event venue during ingress or egress. If stakeholders fail to implement proper pedestrian control measures, then pedestrians will risk exposure to moving traffic and traverse travel lanes, causing traffic congestion, under heavy flow conditions. Also, the popularity of planned special event transit service requires advance consideration of moving pedestrians between an event venue and nearby transit stations.



Figure 6-19
At-Grade Pedestrian Crossings Adjacent to a Venue Gate

A successfully implemented pedestrian access plan for planned special events permits *rapid dispersion* of pedestrian flow. Although high pedestrian volumes encompass the immediate venue area during ingress and egress, the plan effects efficient access through a radial network of pedestrian routes. It also includes time-sensitive strategies to minimize overcrowding conditions at venue gates and mode transfer points. The plan also considers a continuous shuttle bus service operations detail to handle event patrons destined to/from satellite parking areas and transit stations not easily accessible by foot.

Pedestrian Control

Pedestrian access routes are comprised of two components:

- A *routing* component, consisting of sidewalks or paths between street intersections.
- A *crossing* component, consisting of infrastructure or other vehicle control measure that allows pedestrians to cross a street safely.

Planned special event pedestrian management involves the implementation of integrated control tactics to facilitate pedestrian routing and crossing between a mode transfer point and the event venue. Key considerations include:

- Pedestrian access route capacity represents the smallest of its routing and crossing component capacities.
- In a radial network, where pedestrian volume is highest at the center or venue, the event planning team should design pedestrian access routes to provide increasingly greater capacity from site area to venue.
- Another important planning and operations consideration involves preventing the intersection of pedestrian access routes. This results in overcrowding at the intersection point and compromises pedestrian safety, particularly if two streams of pedestrians intersect at a street crossing.
- Practitioners should design each access route to exclusively serve a venue gate and implement control tactics to prevent routes from converging until reaching the event venue.
- Associated tactics include erecting pedestrian crossing barriers, as shown in Figure 6-20, at street intersections and deploying roving law enforcement pa-

trols for pedestrian protection and crowd control.



Figure 6-20
Pedestrian Crossing Barrier

- Use of bicycle, equestrian, or all-terrain vehicle patrols allow officers to conveniently access and travel on streets, pedestrian access routes, and parking areas.
- A traffic operations agency can assist law enforcement in maintaining orderly pedestrian flow through the site area by using CCTV to monitor pedestrian travel and operations at critical crossing points. Shown in Figure 6-21, stakeholders managing travel for major events at the Daytona International Speedway successfully used portable CCTV cameras to monitor the pedestrian egress flow rate from the venue in addition to operations at several nearby street crossings.



Figure 6-21
Pedestrian Traffic Monitoring Via CCTV

Pedestrian Routing

Two strategies for managing pedestrian flow on walkways during planned special events include:

- Locating access route termini.
- Providing additional, temporary pedestrian walkway capacity.

Key design aspects to consider include:

- The event planning team and parking area operators should avoid having a pedestrian access route and parking area access point intersect.
- Vehicle turning movements in and out of access driveways impact pedestrian safety and flow, and the implementation of special traffic control measures reduces vehicle arrival rate to parking areas and may create congestion on parking area access roads. Instead, stakeholders should provide an uninterrupted pedestrian walkway, connecting a pedestrian access route to parking areas, and station volunteers inside parking areas to prevent pedestrian/vehicular conflicts.
- To effect pedestrian dispersion in the immediate area of the venue, locate temporary transit stations a sufficient distance away from venues while still affording event patrons a convenient walking distance. As a result, potential station overcrowding during event egress does not impede pedestrians from accessing routes leading to other mode transfer points. This tactic also benefits transit users as traffic management team personnel can better manage station queues by cordoning loading/unloading areas and closing street curb lanes to furnish additional queuing area not available adjacent to the venue.

Obtaining additional pedestrian walkway capacity involves increasing walkway width.

Tactics for achieving increased width include: (1) removing movable sidewalk obstacles, such as news racks and benches and (2) closing the adjacent street curb lane for pedestrian traffic. Key considerations include:

- Consider implementing the latter tactic between the event venue and access points to parking areas and pick-up/drop-off areas, but terminate the lane at street intersections if turning traffic can traverse the pedestrian-designated curb lane.
- Use barricades and drums, coupled with law enforcement patrol, separate traffic and pedestrian flow.
- To satisfy both public safety agency and pedestrian accommodation needs, consider closing street segments adjacent to an event venue. For example, as shown in Figure 6-22, a closed street can function as a pedestrian access route and emergency access route.



Figure 6-22
Pedestrian Access Route and Emergency Access Route⁽⁸⁾

Pedestrian Crossing

Table 6-15 describes tactics for improving the safety and capacity of pedestrian street crossings.

Table 6-15
Pedestrian Crossing Tactics

TACTIC	APPLICATION
Temporary pedestrian bridge	<ul style="list-style-type: none"> • Provides uninterrupted flow. • Achieves total separation of pedestrians and vehicles. • Enhances pedestrian safety.
Street closure	<ul style="list-style-type: none"> • Provides uninterrupted flow. • Accommodates very heavy pedestrian volume. • Allows pedestrian dispersion. • Requires officer control.
Mid-block street crossing	<ul style="list-style-type: none"> • Provides interrupted flow. • Avoids pedestrian conflict with turning vehicles. • Requires officer control.
Staffed crossings	<ul style="list-style-type: none"> • Provides interrupted flow. • Accommodates light pedestrian volume.

Use of a temporary pedestrian bridge represents an effective tactic for crossing wide streets or roadways where traffic throughput is emphasized. Advantages include safety and minimal traffic management team staffing requirements. Disadvantages include cost and the lack of access for disabled persons. Figure 6-23 shows a temporary, prefabricated pedestrian bridge that was successfully deployed during the 1995 U.S. Golf Open as a pedestrian crossing, over an arterial roadway and the Long Island Rail Road, between the event venue and two mode transfer points (transit station and VIP parking area).



Figure 6-23
Temporary Pedestrian Bridge

Temporary street closures during event egress allow the venue to empty faster and permits pedestrians to disperse to a number of adjacent mode transfer points and pedestrian access routes. Recognize that heavy pedestrian flow on street crosswalks near venue gates significantly reduces traffic turning movement capacity. Therefore, total street closure mainly impacts cross street through traffic flow, traffic that can be diverted away from the immediate venue area. The traffic management team reopens the street when traffic signal phasing can accommodate remaining pedestrian demand. As shown in Figure 6-24, law enforcement may close a road segment(s) adjacent to the main gate of a continuous event to alleviate

the need to staff multiple at-grade crossings as patrons arrive and depart throughout the event day.



Figure 6-24
Road Closure Adjacent to Event Venue

Figure 6-25 shows a staffed, mid-block pedestrian crossing. Mid-block crossings not only reduce the likelihood of vehicle-pedestrian collisions, but accident severity as well. As with all staffed crossings, traffic management team supervisors should establish the relative priority of competing pedestrian and traffic movements and communicate that priority to officers controlling such crossings.



Figure 6-25
Staffed Mid-block Crossing

Analysis

Practitioners should analyze the level of service of major pedestrian access routes and crossings, first and foremost to ensure anticipated pedestrian demand levels do not exceed available capacity at any time during event ingress and egress. Overcrowding on pedestrian facilities compromises the safety of pedestrians and may interfere with adjacent street traffic flow.

The Highway Capacity Manual (HCM) includes procedures for computing capacity and level of service for various types of pedestrian routes and crossings, summarized in Table 6-16.⁽⁹⁾ With regard to capacity, a Level of Service E indicates design volumes approach the limit of facility capacity. The HCM also discusses characteristics of pedestrian flow and various performance measures.

Table 6-16
Pedestrian Facilities Covered in the
Highway Capacity Manual

FACILITY TYPE
<ul style="list-style-type: none"> • Walkways and sidewalks • Pedestrian queuing areas (e.g., transit/shuttle stations and street crossing areas) • Pedestrian crosswalks at signalized and unsignalized intersections • Pedestrian facilities along urban streets (e.g., extended pedestrian facilities with both interrupted and uninterrupted flows)

Disabled Accessibility

The pedestrian access plan must accommodate disabled event patrons arriving via all travel modes serving a planned special event. This involves examining all routes that a disabled event patron may traverse and, in turn, ensuring the patron has an unimpeded path from mode transfer point to venue seat. Accessible pedestrian routes must: (1) maintain a minimum path width, (2) include curb cuts and temporary ramps for negotiating grade separations, and (3) conform to local Americans with Disabilities Act (ADA) regulations. If a particular route (e.g., from express/charter bus station or transit station) does not meet accessibility requirements, then accessible shuttles must operate between affected mode transfer points and accessible pick-up/drop-off areas.

Permanent venue parking areas have designated accessible parking and pick-up/drop-off areas that provide disabled event patrons with unobstructed access to event venue

gates. This does not apply for temporary venues or locations of street use events. Disabled parking spaces at municipal and private parking areas serving continuous events and street use events may be located too far a distance from venue gates or event viewing areas. Each individual special event parking area includes a minimum number of disabled parking spaces to meet ADA regulations, thus rendering an on-demand, accessible shuttle operation from the lot impractical. As a result, the event planning team should sign and staff one parking area, nearest to venue gates or prime event viewing areas, for disabled parking. Figure 6-26 shows an access point to a municipal lot designated a disabled parking area for a downtown planned special event at a temporary venue.



Figure 6-26
Special Event Disabled Parking Area Access
Point

Shuttle Bus Service

A shuttle bus service should be operated continuously within the venue site area during event ingress and egress, with the service schedule revolving around event patron arrivals and departures. Common shuttle service to/from a planned special event venue include: (1) satellite parking area service, (2) transit station service, and (3) employee parking area service. A particular planned special event may involve multiple private and public (e.g., transit agency) shuttle service operators, all of whom must co-

ordinate with the event planning team on service details and station locations.

The shuttle bus service planning process should incorporate the considerations listed in Table 6-17. These considerations impact the overall travel choice utility associated with the activity network supported by a shuttle bus service. Its design and operation on the day-of-event must satisfy a range of user needs, summarized in Table 6-18. These needs pertain to service and station provisions. Successful shuttle bus services positively influence the travel mode or destination (e.g., off-site) choice made by persons traveling to and from a planned special event. As illustrated by the event website promotion displayed in Figure 6-27, an event public information campaign may spotlight shuttle bus operations to promote alternate travel options, such as transit use or parking at a satellite parking area.

Table 6-17
Considerations in Shuttle Bus Operations⁽¹⁰⁾

CONSIDERATION
<ul style="list-style-type: none"> • Travel time • Directness • Avoidance of traffic problem areas • Separation of shuttle buses from event traffic • Boarding locations • Ability to load/unload passengers simultaneously on several buses • Pedestrian routing • Neighborhood impacts

Table 6-18
Shuttle Bus Service User Needs⁽¹¹⁾

NEED
<ul style="list-style-type: none"> • Have less than a 5-minute wait time. • Have a short or moving embarking queue. • Have an on-time arrival. • Be free of confusion. • Be protected from weather conditions. • Have less than a quarter-mile walk to/from the shuttle station.

"QUICK SCHOTT" FROM NEW BUCKEYE LOTS SHUTTLE INFO:
 *FREE SHUTTLE
 *Parking is \$5 at all Mens Basketball Games and Select Special Events
 *Easy access to the freeway after the event
 *Bus arrives every 5-10 minutes
 *Disability shuttles available
 DIRECTIONS: From 315: Exit Ackerman Road and proceed east on Ackerman Road. Turn right onto Fred Taylor Dr. Buckeye Lots will be on your right side.

Figure 6-27
Shuttle Bus Service Promotion (*Graphic courtesy of The Ohio State University.*)

Service Design

The end result in shuttle bus service design involves determining the required number of buses to meet expected ridership levels. Based on event category and associated operations characteristics, the number of shuttle buses needed during event ingress and egress may vary. Discrete, recurring events at a permanent venue demand maximum service at the end of the event.

Primary service design inputs include event patron arrival and minimum service headway (e.g., time between bus arrivals). To estimate the magnitude and rate of arrival, consult parking demand analysis and travel forecast results applicable to the mode transfer point(s) (e.g., parking area or transit station) to be serviced by the shuttle bus. Utilize vehicle occupancy figures referenced in the event feasibility study to convert vehicle-trips to person-trips in order to develop shuttle ridership estimates. The shuttle bus service will serve approximately the same number of persons during egress operation as it does during ingress operation. As previously noted, demand rates likely may vary. On the day-of-event, service operators should utilize ingress passenger counts to reevaluate service needs before the planned special event ends.

Minimum service headway represents a function of route service time. The following equation defines route service time:

$$\text{Route service time} = (\text{Round-trip travel time}) + (\text{Number of shuttle bus stations on})$$

*route) * (Average passenger loading time at one station + Average passenger unloading time at one station + Average dwell time at one station)*

Travel time estimates must reflect day-of-event operations and may vary depending on transit accommodation strategies contained in the event traffic control plan. The following equation defines minimum service headway:

Minimum service headway = (Route service time) / (Number of shuttle buses operating on a specific route at any given time)

The following steps describe how to determine the required capacity to successfully operate a shuttle bus service on a particular route:

- First, design the shuttle bus fleet size based on the criteria of providing a minimum service headway less than the maximum desired user wait time. Using the above equation for minimum service headway: (1) substitute the maximum desired user wait time for minimum service headway, (2) insert the route service time, and (3) solve for the number of shuttle buses required on the route, rounding up to account for the user wait time criteria. Note that the service headway between successive shuttle buses may be greater than the minimum service headway if the fleet of buses assigned to a particular route are not perfectly staggered to yield equal headways between buses.
- Second, compare the event patron rate of arrival to the rate of available shuttle bus seats per unit of time. To accommodate pedestrian flow during peak periods of ingress and egress, practitioners should consider a sub-hourly analysis (e.g., peak 15 or 30 minutes) using the highest anticipated event patron arrival rates.

For analysis purposes, arrival rate refers to the rate of pedestrians arriving to a shuttle bus station at a parking area/transit station and at a venue during event ingress and egress operations, respectively. Practitioners should increase the number of shuttle buses serving a particular route, as necessary based on analysis results, to meet peak event patron arrival rates and avoid overcrowding at shuttle bus stations.

- Third, account for dwell time and event patron demand at all shuttle bus stations serviced by a particular shuttle route.

Station Design

A temporary shuttle bus station will exist at both a mode transfer point and at the event venue. Station design and operations should facilitate the rapid loading and unloading of shuttle passengers without impacting adjacent traffic operations and pedestrian movement. Because of the high concentration of pedestrian traffic at the event venue during ingress and egress, venue station design is critical. On-site shuttle bus stations should: (1) facilitate easy shuttle bus access, (2) provide a defined passenger waiting area, (3) promote an orderly queue formation, and (4) shield waiting passengers from adjacent vehicular and pedestrian traffic. Figure 6-28 shows an on-site shuttle bus station located adjacent to a roadway designated exclusively for bus use during a rural planned special event. Table 6-19 summarizes key considerations that surround shuttle bus station design.



Figure 6-28
On-Site Shuttle Bus Station

Management

Shuttle bus service operators should have access to pertinent traffic management team radio communication channels and/or consider stationing a supervisor in the event command post. Station volunteers can monitor passenger queuing and loading/unloading times. Bus operators can monitor passenger volume and communicate bus travel time and location. The service supervisor, in turn, directs service response to schedule delays, bus breakdowns, station overcrowding, and traffic incidents blocking service routes.

Table 6-19
Considerations in Shuttle Bus Station Design

CONSIDERATION	TACTIC	BENEFIT
Location at venue	<ul style="list-style-type: none"> Designate an exclusive curbside bus lane on a road segment adjacent to the venue. Locate station adjacent to bus lane but away from venue gates. Design bus loading areas and turnarounds by using appropriate bus turning templates. Layout bus turnarounds in the field and use the selected bus size for a test drive to assure U-turns can be accommodated without requiring the bus to back-up. 	<ul style="list-style-type: none"> Avoids pedestrians using shuttle from crossing streets. Assures safe and efficient design for bus movements.
Pedestrian management	<ul style="list-style-type: none"> Connect stations to planned pedestrian access routes. Enclose passenger waiting area with temporary barriers (e.g., snow fencing or barricades) 	<ul style="list-style-type: none"> Improves passenger safety. Minimizes conflict with other pedestrian traffic.
Shuttle loading	<ul style="list-style-type: none"> Designate sections within passenger waiting area that correspond to different shuttle bus destinations (if any). Erect signs disseminating information on fare structure, ticket purchasing, and important regulations. Deploy volunteers to answer questions and assist passengers in shuttle embarking and disembarking. Create ability to load/unload several buses simultaneously. 	<ul style="list-style-type: none"> Reduces shuttle loading time. Eliminates passenger confusion.
Passenger comfort	<ul style="list-style-type: none"> Provide shelter over station (e.g., tent). 	<ul style="list-style-type: none"> Creates a landmark for identifying the station. Keeps passengers protected from weather conditions.

Shuttle bus operation contingency plans should include alternate shuttle routes in the event of a traffic incident occurrence. The alternate route should traverse a completely different set of streets than the preferred route. Service operators should maintain an operations and route detail for any parking areas denoted as an alternate (e.g., for overflow or weather reasons) to the primary lot served by the service. Other applicable contingency information includes temporary service locations for bus maintenance and fueling.

Cost

The operation of a shuttle bus service likely will realize greater efficiency for discrete events compared to continuous events such as fairs and festivals. Funding is obtained through satellite parking area fees, corporate sponsorship, or general event revenues. In some cases, parking is free, and the shuttle service charges a nominal fare to passengers. This arrangement may cause delays during passenger embarking, particularly if the bus operator must collect fares. Shuttle users likely will resist any fare charged for shuttle bus service from a transit station. Therefore, a fare-based shuttle service could significantly impact the utility that event patrons assign to transit when considering planned special event travel options.

Plan Specifications

Table 6-20 lists pertinent pedestrian access plan informational elements of interest to event patrons and participants. A traffic flow map or traffic control plan, prepared as a traveler information tool, may contain callouts to pedestrian facilities and day-of-event control tactics. Traffic management team personnel will require an implementation plan tailored to each pedestrian management initiative.

Table 6-20
Pedestrian Access Plan Checklist

ELEMENT
<ul style="list-style-type: none"> • Show recommended pedestrian access routes. • Show pedestrian bridges and tunnels. • Indicate special pedestrian crossing tactics (e.g., street closure or mid-block crossings) • Show shuttle bus route, direction of travel, stop locations, and loading and unloading areas. • Show vertical connections between infrastructure levels (e.g., stairs, escalator, elevator, ramps). • Show designated pedestrian crossings at street use event venues. • Indicate special regulations. • Highlight pedestrian access routes and crossings suitable for disabled event patrons.

TRAFFIC FLOW PLAN

Overview

The preparation of a traffic flow plan represents a required preliminary step to the design of a traffic control plan. The traffic demand analysis component of a feasibility study indicates the freeway/arterial corridors and local streets that event patrons will utilize to access the venue site area. In developing a traffic flow plan, the event planning team modifies predicted flow routes to maximize transportation system operating efficiency on the day-of-event while meeting public safety agency needs. In turn, a traffic control plan facilitates traffic flow on recommended flow routes through service-enhancing strategies and tactics that handle forecasted event traffic demand on these routes.

The advantage of developing a traffic flow plan is two-fold:

- Allows the event planning team to influence and control event patron patterns of ingress and egress. This improves transportation system operations and reduces

the impact to neighborhoods surrounding the event venue.

- Provides important advance information for event patrons and participants regarding *best access* routes to the event. These directions provide event patrons, particularly those not familiar with the region, an increased level of comfort when traveling on the day-of-event. Event patrons also recognize that the traffic management team will sign, staff, and prioritize flow on designated routes. Non-attendee transportation system users benefit by gaining advance notice of event-designated traffic and transit routes.

Information Requirements

Table 6-21 lists various sources of data and information that drive the traffic flow plan development process. Key points that should be considered include:

Table 6-21
Traffic Flow Plan Information Sources

SOURCE
<ul style="list-style-type: none"> • Market area analysis <ul style="list-style-type: none"> ○ Regional directional distribution • Traffic demand analysis <ul style="list-style-type: none"> ○ Local directional distribution ○ Day-of-event traffic demand • Site access and parking plan <ul style="list-style-type: none"> ○ Parking area assignment • Road closures required for event staging <ul style="list-style-type: none"> ○ Street use event • Public safety agency requirements <ul style="list-style-type: none"> ○ Emergency access routes • Transit agency requirements <ul style="list-style-type: none"> ○ Scheduled and event service

- A traffic flow plan should accommodate background traffic flow in addition to transit service, which will be promoted as an event patron travel alternative.

- Recommended traffic flow routes should not traverse or intersect emergency access routes, if possible.
- Event mandated road closures refer, in particular, to street use event parade and race routes. If not already designated, the event planning team should first determine the street use route.
 - Table 6-22 provides a general checklist for evaluating the impact of closing one or more adjoining street segments, while Figure 6-29 shows a parade staging area.
 - Typical staging areas include off-street parking areas and cross streets adjacent to the parade route.
 - Upon reviewing the street closure checklist, the event planning team should consult with community interest stakeholders and public safety agencies in order to identify all concerns and solicit input.

Another key information component concerns the identification of roadway capacity deficiencies or bottleneck locations. This includes freeway weaving areas, freeway ramp junctions, freeway/street lane-drops, and intersection traffic control. Bottleneck locations yield a constant rate of flow (e.g., saturation rate), and appropriate traffic control strategies can temporarily alleviate the bottleneck on the day-of-event by increasing saturation flow rate. Consult the feasibility study roadway capacity analysis results or conduct new analyses to evaluate operations on traffic flow routes not previously considered. In addition, practitioners should consider driving, and creating a video/photo log, of proposed traffic flow routes, emergency access routes, and transit routes. This activity assists in verifying computer analysis results and facilitating off-site event planning team evaluation of recommended routes.

Table 6-22
Road Closure Impact Checklist⁽¹²⁾

ELEMENT	PROVISION
One-way street operation	<ul style="list-style-type: none"> Does not significantly disrupt traffic operations on adjacent one-way streets.
Impacts on access	<ul style="list-style-type: none"> Does not have an adverse impact on: <ul style="list-style-type: none"> Public safety agency station access Hospital access Local resident neighborhood access Public facility access (e.g., schools, parks, etc.) Access to places of worship Access to local businesses Heavy vehicle access Public transit access
Parade staging area	<ul style="list-style-type: none"> Provide sufficient area for parade staging.
Coincidence with roadway construction	<ul style="list-style-type: none"> Does not conflict with existing roadway construction activities.
Proximity to major traffic generators	<ul style="list-style-type: none"> Has no adverse impact on nearby major traffic generator (e.g., shopping center, entertainment venue, etc.).
Presence of alternate routes for local access	<ul style="list-style-type: none"> Has available alternate routes for local access. <ul style="list-style-type: none"> Width of traveled-way and number/designation of travel lanes Traffic control (e.g., traffic signals and signs) Street signage Restricted traffic movements Presence of impeding traffic calming devices



Figure 6-29
Parade Staging Area

Strategic Route Planning

The traffic flow plan must account for two types of traffic flow routes: *corridor* and *local*:

- Corridor flow routes include the freeways and major arterial roadways serving the planned special event venue.

- Local flow routes traverse the street system adjacent to the event venue and service a particular parking area or pick-up/drop-off point.
- A *target point* represents the point of connection between corridor and local flow routes, characterized by a freeway interchange or major arterial intersection.
 - In the driver's mindset, reaching a target point during event ingress signals entrance into the local area surrounding the event site. At this point, the driver anticipates receiving information and directions on event parking and pick-up/drop-off areas.
 - During event egress, the driver's objective involves reaching the nearest target point (e.g., freeway interchange) in order to access a familiar corridor flow route leading toward home or some other destination.

- On the day-of-event, the management of corridor flow routes typically involves surveillance and dissemination of traveler information regarding target point and local flow route operations. The traffic management team implements traffic control initiatives beginning at the target point and continuing along the local flow route.
 - Figure 6-30 displays a traffic flow plan that indicates, for reference by event patrons, various target points for access to individual venue parking areas.

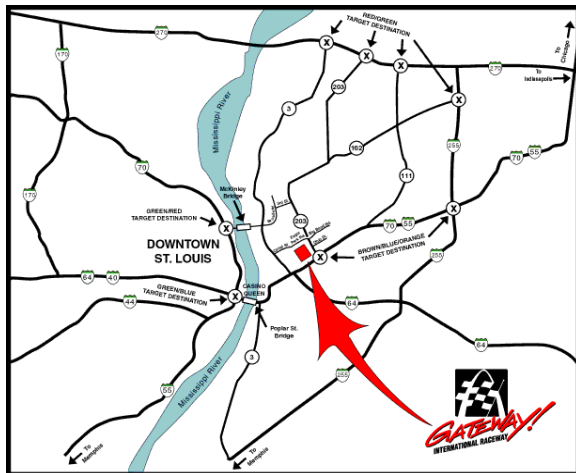


Figure 6-30
Corridor Target Points (Graphic courtesy of Dover Motorsports, Inc.)

Table 6-23 indicates general considerations for developing traffic flow routes. Figure 6-31 shows one corridor flow route spawning, via two target points, three local flow routes destined to the same venue access point. The figure demonstrates how a traffic flow plan works to assure that traffic demand on the existing street system adjacent to an event venue does not exceed capacity on the day-of-event if signed and staffed appropriately.

Table 6-23
Traffic Flow Route Development Considerations

CONSIDERATION
<ul style="list-style-type: none"> • Focus on ingress and egress operations separately. • Avoid left-turn movements across traffic flow. • Divert traffic flow routes from critical locations (e.g., other flow routes) that could create congestion. • Develop multiple local flow routes, connected to one corridor flow route, as necessary to achieve optimum traffic distribution on the roadway system. • Assign local flow routes to contingency overflow parking areas identified in the site access and parking plan.

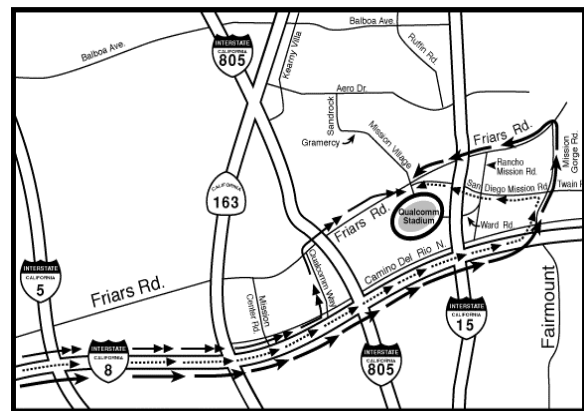


Figure 6-31
Multiple Local Traffic Flow Routes (Graphic courtesy of the City of San Diego.)

Figure 6-32 describes a process for assessing corridor and/or local traffic flow routes. Traffic control strategies for increasing corridor route capacity include eliminating weaving areas or other ramp control tactics. Strategies for local routes include striping additional travel lanes to handle flow in the predominant direction, restricting turning movements, and revising traffic signal timing plans. The “Traffic Control Plan” section of this chapter describes these strategies and other mitigation alternatives in greater detail.

Aside from parking contingencies and the occurrence of severe congestion on the day-of-event, practitioners should maintain and promote the same flow routes identified in the traffic flow plan. These routes are generally pre-signed and communicated to event patrons and participants prior to the event. Measures of effectiveness for evaluating the performance of designated traffic flow routes, in addition to corresponding traffic control strategies, include: (1) time to regain free-flow operations and (2) time to clear parking areas.

Alternate Routes

The deployment of an alternate route plan marks a key traffic management strategy for minimizing the effect of non-recurring congestion, caused by a traffic incident or event-generated traffic demand, on traffic flow. It serves to reduce demand at a traffic incident site or bottleneck through the diversion of traffic from the mainline to parallel freeways, arterials, and streets. As part of traffic incident management efforts, some jurisdictions may maintain alternate route plans for freeway and arterial segments traversing a region.

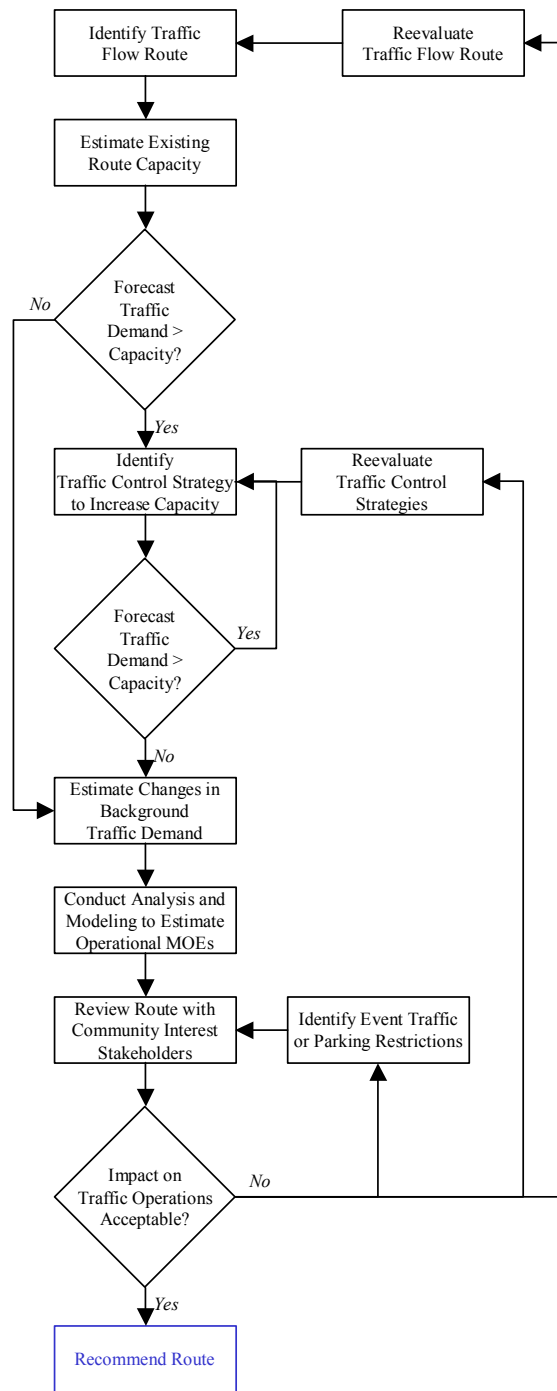


Figure 6-32
Traffic Flow Route Assessment Process

An alternate route plan represents a contingency plan that stakeholders should consider developing for corridors serving a planned special event venue, where high-speed crashes or cargo spills may block travel lanes for a long duration. In other instances, an alternate route plan becomes a critical component of the overall event traffic management plan when roadway or bridge construction activities limit the capacity of mainline corridor flow routes. Transportation system operators should also promote travel choice alternatives, such as using other travel modes, as an option to driving alternate routes.

The process of developing alternate route plans and procedures for plan deployment requires a group endeavor involving all affected agencies, most of which likely comprise the event planning team and/or traffic management team. Table 6-24 lists the steps required in developing an alternate route plan. Practitioners should consult NCHRP Synthesis 279, *Roadway Incident Diversion Practices*, for state-of-the-practice information about the development and deployment of alternate route plans.⁽¹³⁾ Table 6-25 highlights numerous considerations in alternate route plan development, all of which are addressed in the cited synthesis report.

Table 6-24
Alternate Route Plan Development Process

STEP
<ul style="list-style-type: none"> • Identify mainline bottleneck or problem locations. • Evaluate proposed alternate routes. • Determine appropriate criteria for plan deployment. • Achieve participating agency agreement on roles and responsibilities. • Identify equipment and personnel resources required to deploy an alternate route plan. • Establish guidelines for plan evaluation and updating.

The effectiveness of deploying an alternate route plan revolves around the accommodation of diverted traffic along the alternate route. It is essential that the diverted traffic encounter an equal or higher level of service on the alternate route compared with that on the mainline. As shown in Figure 6-33, alternate route plan deployment, particularly plans developed specifically for a planned special event, typically requires significant law enforcement resources for alternate route traffic management and operations surveillance. Technology applications for managing traffic on an alternate route, and reducing field personnel requirements, include the installation of dynamic route guidance signs controllable from a transportation operations center. Figure 6-34 shows a dynamic trailblazer sign. During the program planning phase, stakeholders managing recurring planned special events at permanent venues should evaluate the need for installing these devices along commonly used alternate routes serving the event venue.

Emergency Access Routes

Emergency access route planning involves designating street closures within the venue site area to connect the some or all of the following termini: (1) public safety (e.g., fire and emergency medical service) headquarters, (2) local hospital, (3) freeway or major arterial serving a regional hospital, and (4) location of staged ambulances and first-aid stations for on-site medical treatment.

Table 6-25
Alternate Route Plan Development Considerations

ITEM	CONSIDERATION
<i>Alternate Route Selection</i>	
<ul style="list-style-type: none"> • Stakeholder Roles and Coordination 	<ul style="list-style-type: none"> • Advance planning stakeholders and stakeholders involved in alternate route deployment • Interagency agreements for advance planning and/or operations
<ul style="list-style-type: none"> • Types of Alternate Routes 	<ul style="list-style-type: none"> • Freeway, street, and toll facility • Secondary alternate routes
<ul style="list-style-type: none"> • Inventory Potential Alternate Routes 	<ul style="list-style-type: none"> • Access, capacity, vehicle restrictions, traffic control, background traffic, pavement conditions, road geometrics, percentage of heavy vehicles, transit accommodation, and available surveillance • Considerations in rural, urban, and metropolitan areas
<ul style="list-style-type: none"> • Alternate Route Evaluation 	<ul style="list-style-type: none"> • Capacity analysis and modeling • Traffic signal timing optimization
<ul style="list-style-type: none"> • Alternate Route Selection Criteria 	<ul style="list-style-type: none"> • Road user and community impacts
<i>Alternate Route Plan Development</i>	
<ul style="list-style-type: none"> • Alternate Route Plan Map 	<ul style="list-style-type: none"> • Incident location limits, direction of routed traffic, ramp/street closures, traffic control resources, alternate route distance and capacity, alternate route regulations and restrictions, and emergency service stations
<ul style="list-style-type: none"> • Traffic Control Requirements 	<ul style="list-style-type: none"> • Traffic control officers, temporary signs, and barricades
<ul style="list-style-type: none"> • Criteria for Alternate Route Plan Deployment 	<ul style="list-style-type: none"> • Incident duration, number of lanes blocked, time of day, etc.
<ul style="list-style-type: none"> • Deployment Operations Plan 	<ul style="list-style-type: none"> • Checklist for field supervisor and communications center supervisor
<i>Road User Accommodation</i>	
<ul style="list-style-type: none"> • Motorist Information Resources 	<ul style="list-style-type: none"> • Pre-trip and en-route • Message sets • Planned media release
<ul style="list-style-type: none"> • Traffic Management on Alternate Route 	<ul style="list-style-type: none"> • Permanent trailblazers • Technology applications



Figure 6-33
Background Traffic Diversion



Figure 6-34
Dynamic Route Guidance Sign (*Photo courtesy of the Minnesota DOT.*)

For large-scale planned special events, emergency access routes remain closed to all non-emergency vehicles. Traffic control officers staff each intersection along the route and permit side street traffic to cross the route when conditions permit. For smaller-scale special events, the emergency access route denotes a local flow route for emergency vehicles that may be utilized by general traffic under non-emergency conditions. Under an emergency scenario, law enforcement officers may escort emergency vehicles, using a rolling roadblock, via the designated access route. Emergency access routes should not traverse or intersect event patron traffic flow routes to/from the event venue and associated parking areas.

The provision of emergency access lanes along streets slated for closure in order to

stage a planned special event allows unimpeded emergency vehicle access throughout the entire local street network impacted by the event. This particularly applies to street use event routes. Typical specifications for an emergency access lane involve delineating a 20 foot wide, paved curb lane within the existing roadbed (e.g., shoulder plus traveled-way).

Background Traffic Accommodation

The composition of background traffic, or non-attendee motorists, traversing streets and highways in the vicinity of a planned special event venue include the following categories:

- Regional through traffic
 - Includes truckers and intra- or interstate travelers represent regional through traffic.
- Local through traffic
 - Includes commuters and area residents, some of whom may simply cruise local streets adjacent to the event.
- Neighborhood residents and businesses
 - Includes residents living in the immediate vicinity of the event venue that may incur impacts attributed to high traffic demand and temporary traffic control strategies.
 - Includes nearby businesses requiring accommodation for both employees and patrons.

Table 6-26 presents a range of passive (e.g., traveler information dissemination only) and aggressive (e.g., physical traffic control) tactics for accommodating background traffic during a planned special event.

Table 6-26
Tactics for Accommodating Background Traffic during Planned Special Events

USER GROUP	TACTIC	BENEFIT
Regional through traffic	<ul style="list-style-type: none"> Freeway-to-freeway diversion beginning a significant distance upstream of an event venue. 	<ul style="list-style-type: none"> Maintains mobility. Reduces the level of background traffic on corridor flow routes serving the venue.
Local through traffic	<ul style="list-style-type: none"> Arterial-to-arterial diversion 	<ul style="list-style-type: none"> Eliminates non-attendee exposure to venue site area. Discourages cruising around site area. Allows public to become familiar with route after repeated implementation.
Neighborhood residents and businesses	<ul style="list-style-type: none"> Parking restrictions 	<ul style="list-style-type: none"> Permits resident access to on-street parking spaces. Permits employee and customer access to public parking areas.
	<ul style="list-style-type: none"> Traffic control points 	<ul style="list-style-type: none"> Restricts neighborhood area access to residents and business employees.
	<ul style="list-style-type: none"> Signing and alternate routes 	<ul style="list-style-type: none"> Directs customers to businesses and other traffic generators.

Freeway-to-Freeway Diversion

Transportation management system operators can implement freeway-to-freeway diversion through control of permanent changeable message signs and highway advisory radio.

Parking Restrictions

Parking restrictions accomplish the task of preventing event-generated traffic from deviating from local event traffic flow routes and traversing neighborhood residential and commercial areas.

Traffic Control Points

Road closures may impact customer access to businesses and other traffic generators. Figure 6-35 shows a sign diverting traffic destined to a major traffic generator located adjacent to a planned special event temporary venue.

Large-scale events may generate sufficient traffic demand to saturate the entire local street system adjacent to the event venue,

causing undue congestion and blocking neighborhood access and circulation patterns. If this represents a potential concern during advance planning, then locate event parking areas a sufficient distance away from affected neighborhood areas and create traffic control points to prevent event-generated traffic from penetrating these areas. Residents and business employees would receive a pass allowing them access through the traffic control points.

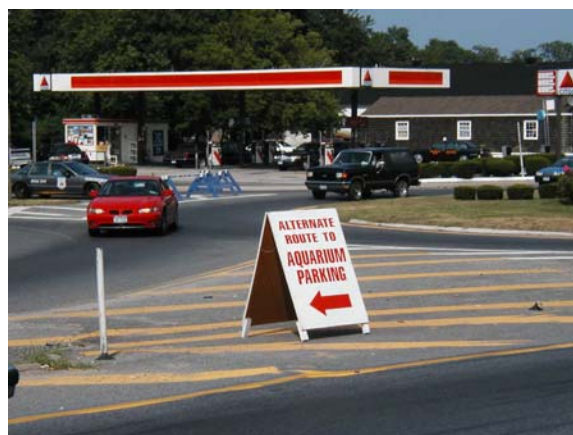


Figure 6-35
Accommodation of Traffic Destined to Major Generators

Arterial-to-Arterial Diversion

Arterial-to-arterial diversion applies to planned special events occurring in city downtown or commercial areas, where arterials and local streets adjacent to the event venue serve a significant volume of background traffic. In turn, the addition of event-generated traffic causes congestion and impacts commercial businesses (e.g., restaurants, hotels, retail stores). This tactic involves: (1) restricting commercial street access to businesses employees, customers, emergency vehicles, taxis, and transit buses and (2) deploying an alternate route to direct background through traffic and event-generated traffic around the restricted street.

Planned special event stakeholders in Atlanta, Georgia developed such an alternate route, entitled the “Blue Loop” to divert traffic away from restricted Peachtree Street during special events in downtown Atlanta.⁽¹⁴⁾ Stakeholders prepared the plan during the program planning phase in response to lessons learned from past planned special events that occur in the Atlanta downtown area and generate significant automobile traffic. They hope the term “Blue Loop” becomes an alert that city residents will recognize and understand that the alternate route is in effect. Traffic monitoring represents a key to Blue Loop operation, and the route deployment detail specifies several release points for diverting Blue Loop traffic to adjacent highways.

Street use events involving a parade or road race permit the traffic management team to reopen certain roadway sections after event participants pass, even if the event has not completed. Background traffic accommodation includes disseminating specialized traveler information, summarized in Table 6-27, prior to the event. The information provides non-attendee transportation system users a timeframe, relative to the parade/race pace and field length, that certain route sections

will be closed. Otherwise, travelers may mistakenly assume that the entire street use event route will remain closed for the duration of the parade or road race.

Table 6-27
Pre-Trip Traveler Information for Street Use Events

ITEM
<ul style="list-style-type: none">• Indicate the entire parade or race route coupled with participant staging and disbanding areas.• Estimate, based on the event pace and length of the field, and specify times each roadway segment and intersection will be closed and reopened.• State other traffic and parking restrictions in the vicinity of the event course.• Organize information for easy reference using maps and reference numbers (for intersections and roadway segments).

Transit Accommodation

A traffic management plan that prioritizes bus flow to and from the venue site area positively influences the utility associated with transit and other travel choices involving express bus, charter bus, or shuttle bus transport. Transit agencies should operate on scheduled bus transit routes up until the last possible point to divert around a road closure required to stage a planned special event. This avoids user confusion and minimizes inconvenience to non-event attendees.

Table 6-28 lists tactics for accommodating scheduled and event-generated bus service.

Table 6-28
Bus Accommodation Tactics

TACTIC
<ul style="list-style-type: none">• Exclusive bus route• Exclusive/priority bus lane• On-demand communication with TMC or command post

Exclusive Bus Route

Exclusive bus routes that cause a negligible impact to background traffic and adjacent neighborhoods represent the recommended bus accommodation tactic. Advantages of exclusive bus routes include: (1) use of the same route during ingress and egress, (2) increased mobility and travel time reliability, and (3) better venue station accommodations for riders as temporary stations may exist adjacent to bus routes, thus avoiding conflicts with event vehicle and pedestrian traffic.

Depending on roadway network layout, a special event traffic flow plan may feature an exclusive bus route from corridor target points and satellite parking areas direct to designated pick-up/drop-off areas adjacent to the venue. Other bus routes may only divert buses around known bottleneck locations. Figure 6-36 shows an exclusive bus route implemented for a major rural planned special event. An exclusive bus route must accommodate minimum overpass height requirements, vehicle weight requirements, and vehicle turning radii.



Figure 6-36
Exclusive Bus Route

Exclusive/Priority Bus Lane

An exclusive bus lane represents a travel lane for bus traffic only. Temporary applications include converting an existing roadway shoulder or travel lane for bus use dur-

ing a planned special event. Table 6-29 summarizes drawbacks associated with the temporary operation of an exclusive bus lane. A bus priority lane is used by both buses and general traffic between intersections. However, at intersection approaches such as that shown in Figure 6-37, regulations limit general traffic to a turning movement, while buses can continue straight through the intersection and “jump” adjacent through-lane queues.

Table 6-29
Exclusive Bus Lane Limitations

LIMITATION
<ul style="list-style-type: none">• Lane may obstruct access to mid-block driveways.• Mid-block turning movements may create queues in adjacent through travel lanes.• Congestion may occur upstream of the lane start, especially if the lane utilizes an existing travel lane.• Shoulder lane use may eliminate area for emergency stops.• Manned intersection control may be required to allow buses and cars to turn in front of the other.• Maintenance of signs and lane delineators are necessary.• Special enforcement requirements are needed.



Figure 6-37
Bus Priority Lane

On-Demand Communication

On-demand communication with a command center represents another bus accom-

modation tactic that the traffic management team may employ in conjunction with other previously discussed tactics. Bus operations supervisors or other traffic management team personnel, stationed at the TMC or event command post, monitor roadway surveillance sources (e.g., CCTV and field observers) in order to identify areas of congestion before a bus encounters it. When supervisors verify a traffic bottleneck affecting a bus route, they immediately notify bus operators and work to divert buses around the congested area.

Plan Specifications

The traffic flow plan serves stakeholders managing the planned special event in addition to event patrons and participants. The product of strategic route planning involves informing event patrons of best access routes to and from the planned special event. Stakeholders can communicate preferred route directions via: (1) event patron ticket mailings, (2) media public information campaigns, and (3) event, venue, or traffic information websites.

Table 6-30 contains a traffic flow plan development checklist.

Appendix I contains example traffic flow maps prepared for various planned special events.⁽¹⁵⁾

Traffic flow plans should emphasize available express, charter, and shuttle bus services from regional park and ride lots and/or satellite parking areas. Driving directions should be accompanied by useful travel tips that coincide with the day-of-event operation of recommended traffic flow routes. Travel tips include accessing en-route traveler information and adhering to traffic control tactics.

TRAFFIC CONTROL PLAN



Overview

Freeways represent corridor flow routes serving event patrons and participants destined to/from a planned special event from various parts of a region and beyond. These corridor flow routes connect to local, street-level flow routes that, in turn, serve event venue parking areas. A freeway interchange marks the point of connection, or target point, between corridor flow routes and local flow routes. Together, the three entities comprise the roadway system servicing a planned special event. The scope of traffic control expands and contracts, proportionally to system performance, during event ingress and egress.

The keys to successful transportation system management, including traffic and transit, during planned special events include:

- Real-time surveillance
- Open communications
- Planned response
- Rapid implementation

Planned response requires a detailed traffic control plan that facilitates a proactive traffic management team response to system deficiencies and unexpected events. The other keys depend on technology applications, such as remote surveillance and automated control of traveler information and traffic control devices, in addition to inter-jurisdictional coordination and collaboration.

Table 6-30
Traffic Flow Plan Checklist

ELEMENT	PROVISION
Event patron corridor flow route	<ul style="list-style-type: none"> • Indicate recommended freeway ramps, by route direction, to/from event venue or specific parking area. • Indicate corridor target points representing a connection to local flow routes. • State freeway or arterial lane assignments for event traffic (e.g., event traffic two right-lanes). • Furnish information on roadway construction projects, as applicable, and indicate alternate routes. • Indicate modified ramp control tactics (e.g., closures/additional lanes). • Show freeway interchange configurations (and direction of travel) and exit numbers. • State tolls, if applicable.
Event patron local flow route	<ul style="list-style-type: none"> • Show connection to corridor flow route. • Indicate local streets that connect to freeway entrance/exit ramps. • Indicate recommended flow route to/from general and reserved parking areas (minimum) or individual parking areas (recommended). • Indicate one-way streets. • Show all road segment closures. • Specify permitted turning movements. • Emphasize controlled turn areas (turns prohibited or only one turn allowed). • List modified roadway striping (e.g., reversible lanes or contra-flow). • Indicate event participant/VIP access routes.
Traveler information	<ul style="list-style-type: none"> • Promote use of regional park & ride locations and event satellite parking areas. • Indicate commercial radio and highway advisory radio frequencies with event travel information. • Alert motorists of static and changeable message sign guidance along route. • Stress importance of following route and adhering to traffic control officer instructions.
Traffic management team information	<ul style="list-style-type: none"> • Include contingency maps detailing routes to overflow parking areas. • Provide written directions for diverting corridor flow routes via local street system. • Indicate alternate routes for ingress and egress to same target point.
Other travel modes / user groups	<ul style="list-style-type: none"> • Show transit routes and state corresponding route number(s). • Show preferred taxi routes. • Indicate bicycle routes. • Indicate pedestrian routes.
Other considerations	<ul style="list-style-type: none"> • Provide information on both ingress and egress flow routes. • Emphasize law enforcement endorsement of recommended routes and directions. • State travel times (by mode of travel) and distances (e.g., from select origins) • State when special traffic flow routes go into effect and terminate. • Disseminate written ingress/egress driving directions. • Indicate potential points of confusion (“do not take”) along recommended route (e.g., freeway exits, turning movements). • Indicate heavy vehicle restrictions. • Indicate expected congested/non-congested areas. • Use callouts to highlight critical movements. • Label all streets and freeways. • Color-code recommended routes to specific parking areas. • Emphasize new provisions (e.g., new road closures or route). • Prepare maps for different venue events if parking plan varies. • Show parking areas. • Show venue gates. • Draw map to scale. • Show private property. • Display landmarks.

Transportation system management typically involves state DOT operating freeways and county/local agencies operating streets and intersections along local flow routes. Planned special events place a premium on information sharing (e.g., CCTV feeds, traffic conditions, traffic incidents, etc.) between these agencies, through local/regional TMC operators and/or agency supervisors at the event command post. This information, and subsequent traffic management team collaboration, drives stakeholder selection and implementation of traffic control techniques.

Freeway Traffic Control

The main objective of freeway management during planned special events involves minimizing freeway mainline congestion. Freeway traffic control tactics implemented in response to local traffic flow or ramp operation degradation preserve freeway mainline operations. Freeway traffic control and management strategies for planned special events include traveler information dissemination and interchange operations.

Traveler Information

Traveler information disseminated upstream of freeway interchanges serving an event venue effectively: (1) introduces all freeway users to critical traffic management plan components affecting traffic flow in the vicinity of the event venue and (2) facilitates freeway lane management as motorists learn of temporary freeway ramp control tactics and/or downstream lane closures that warrant a lane-change. Under lane management, freeway operators strive to reduce turbulence at ramp junctions, weaving areas, and lane drops by alerting motorists to make necessary mainline lane-changes as soon as possible. This also reduces the level of un-

certainty and potential indecision by drivers destined to the planned special event.

Common freeway operator methods of disseminating en-route traveler information to freeway users include use of:

- Changeable message signs
- Highway advisory radio
- Telephone information systems (e.g., 511 service)

The event planning team should develop CMS and HAR message sets specific to planned traffic management and control, during event ingress and egress, on the day-of-event. Supplemental planned message sets should exist for all special event contingency scenarios considered. The traffic management team can reference message boilerplates for other unexpected events such as traffic incidents. If stakeholders utilize 511 for planned special event travel management, then the event planning team should establish protocol for updating 511 recordings. This may involve coordinating with an agency office (e.g., state DOT headquarters) outside the region where the planned special event takes place. The overall advance planning effort improves traveler information accuracy and timeliness on the day-of-event.

En-route traveler information consists either of pre-event or day-of-event information. Prior to the event, permanent and portable CMSs located on freeways serving a planned special event can indicate that an upcoming planned special event may affect corridor travel or cite planned freeway ramp closures. In addition, CMS message sets can advise motorists to tune to an HAR frequency for a message containing additional, detailed information. Table 6-31 lists some HAR pre-event message considerations. These roadside traveler information device

messages should appear a few days before the event, including one weekday to inform commuters that use periodically the freeway corridor on weekends. This strategy also informs visiting event patrons that arrive to the host city prior to the day-of-event.

Table 6-31
Highway Advisory Radio Pre-Event
Message Considerations

CONSIDERATION
<ul style="list-style-type: none"> Planned special event(s) date, time, and location Road closure(s) location Road closure(s) date and time Access to event parking areas Traffic and parking restrictions Alternate routes and modes of travel

Table 6-32 indicates some day-of-event message considerations.

Table 6-32
Highway Advisory Radio Day-of-Event
Message Considerations

CONSIDERATION
<ul style="list-style-type: none"> Directions to local traffic flow routes serving traffic destined to a venue Road closure details Event traffic and parking restrictions

Table 6-33 provides a range of CMS message templates for planned special events. To obtain specific and detailed guidance on the operation of and/or message design for large permanent CMSs or portable CMSs, practitioners should consult the FHWA report *Guidelines for Changeable Message Sign Messages*.⁽¹⁶⁾ For example, Figure 6-38 shows a message displayed on a portable CMS positioned upstream of a freeway interchange serving event patron traffic.

Day-of-event HAR messages include directions on accessing local flow routes to a venue, road closure details, and event traffic and parking restrictions. Activation of HAR sign beacons should occur on the day-of-event only. By taking into consideration

travel speed and HAR signal range, format HAR messages so that motorists can listen to each message at least twice. Ensure portable HAR coverage areas do not overlap with adjacent HAR signals.

Table 6-33
Changeable Message Sign Message
Template

MESSAGE SET DISPLAY
<i>Single Phase – All Freeway Users</i>
<ul style="list-style-type: none"> First line: traffic problem Second line: problem location Third line: recommended action
<i>Single Phase – Specific User Group</i>
<ul style="list-style-type: none"> First/second line: user group (e.g., event patrons) Second/third line: recommended action
<i>Two Phases – Specific User Group</i>
<ul style="list-style-type: none"> First phase: user group First/second phase: recommended action Second phase: additional information sources (e.g., HAR)



Figure 6-38
Portable Changeable Message Sign (Photo
courtesy of the Wisconsin DOT.)

Interchange Operations

Management of freeway interchange operations for planned special events involves maximizing ramp capacity and preventing freeway mainline congestion. Interchange ramps adjoining a freeway and modified local event traffic flow route may represent a system bottleneck if operators fail to im-

prove interchange capacity and operating efficiency. Traffic flow breakdowns can occur on ramps, at weaving areas, or at ramp junctions. Proactive interchange traffic control focuses on minimizing freeway mainline congestion and, during event egress, congestion spillback to local flow routes and adjoining event parking areas.

Table 6-34 presents interchange operations tactics for planned special events. Tactics such as ramp closures and rolling roadblocks represent short-term congestion mitigation measures deployed by the traffic management team on an as-needed basis. Other control tactics, such as the temporary elimination of a freeway weaving area shown in Figure 6-39, comprise the base traffic control plan for the planned special event and operate for a sustained period of time. Law enforcement officers can temporarily close ramps using their cruisers. However, other techniques that reduce valuable personnel requirements include using Type 3 barricades and traffic cones for longer closures. Figure 6-40 shows an example of reinforcing a barrier line, by deploying traffic cones coupled with pedestal-mounted signing, to prohibit late diverges from a freeway mainline. Freeway operators may develop new ramp metering plans based on forecasted traffic volumes and the location of controlling bottlenecks identified through analysis and modeling.

Freeway and interchange operations management during planned special events demands real-time surveillance and control capabilities. Outside of a permanent TMC, wireless and Internet connections allow the traffic management team remote access to CCTV in addition to CMS and HAR devices. As shown in Figure 6-41, freeway operators stationed at an event command post can view CCTV video at critical locations and, in turn, change CMS messages via a laptop computer or HAR messages through a cellular telephone call.

Street Traffic Control

The central traffic control strategy for local flow routes serving a planned special event involves *emphasizing throughput*. Tactics that increase street capacity include a combination of: (1) on-street parking restrictions, (2) vehicle travel on road shoulders, and (3) alternative lane operations. Streets connecting freeway/arterial corridor routes and venue parking areas characteristically serve a predominant directional traffic flow during ingress and the reverse flow during egress.

The following section examines alternative lane operation techniques for handling high-volume flow in one direction.

Alternative Lane Operations

Alternative lane operations comprise two categories:

- Reversible lane operation
- Contraflow operation

Reversible lane operation involves using one or more travel or auxiliary (e.g., two-way left turn lane) lanes for travel in the opposite direction. The street or highway operates as two-way; however, additional travel lanes serve traffic in the predominant direction of flow.

Contraflow operation involves converting a roadway corridor from two-way to one-way operation only.

Major metropolitan areas, such as Washington, D.C., use daily reversible lane (see Figure 6-42) and contraflow (see Figure 6-43) operation to efficiently handle commuter traffic to/from the downtown area.

Table 6-34
Interchange Operations Tactics for Planned Special Events

TACTIC	EVENT TIME	APPLICATION	BENEFIT
Rolling road block	Ingress	<ul style="list-style-type: none"> Initiate tactic on freeway mainline upstream of congested interchange ramp(s). 	<ul style="list-style-type: none"> Alleviates traffic demand at interchange, thus permitting street or ramp bottleneck to dissipate.
	Egress	<ul style="list-style-type: none"> Initiate tactic on freeway mainline upstream of a congested ramp junction or weaving area. Use tactic to meter freeway mainline traffic demand without creating a secondary bottleneck upstream of the congested area. 	<ul style="list-style-type: none"> Reduces level of congestion at the primary bottleneck location.
Entrance ramp closure	Ingress	<ul style="list-style-type: none"> Initiate tactic on ramps in close proximity to and upstream of interchange target point for event traffic. Divert affected traffic to another downstream access point. 	<ul style="list-style-type: none"> Eliminates congestion caused by traffic merging with heavy freeway mainline traffic.
	Egress	<ul style="list-style-type: none"> Initiate tactic as necessary to reduce freeway mainline congestion in the vicinity of closely-spaced entrance ramps. 	<ul style="list-style-type: none"> Reduces freeway mainline congestion or prevents congestion from occurring.
Exit ramp closure	Ingress	<ul style="list-style-type: none"> Close ramp, as needed, to alleviate congestion on a downstream local flow route. Initiate only if a downstream exit ramp and local street system can handle diverted traffic. 	<ul style="list-style-type: none"> Reduces congestion on local flow route.
	Egress	<ul style="list-style-type: none"> Initiate tactic at freeway interchanges connecting local traffic flow routes that have special egress traffic control measures in effect. 	<ul style="list-style-type: none"> Prevents traffic from accessing local flow routes in the direction of the event venue that operate in favor of egress traffic flow.
Elimination of weaving area	Ingress	<ul style="list-style-type: none"> Close cloverleaf interchange entrance ramp to facilitate unimpeded diverge to access adjacent exit ramp. 	<ul style="list-style-type: none"> Eliminates weaving area congestion. Extends deceleration lane for traffic using exit ramp.
	Egress	<ul style="list-style-type: none"> Close cloverleaf interchange exit ramp and mainline right-lane to facilitate unimpeded merge with mainline. 	<ul style="list-style-type: none"> Eliminates weaving area congestion. Extends acceleration lane for traffic using entrance ramp.
Ramp metering	Ingress	<ul style="list-style-type: none"> Meter freeway entrance ramps upstream of interchange target point for event traffic. 	<ul style="list-style-type: none"> Reduces congestion caused by traffic merging with heavy freeway mainline traffic.
	Egress	<ul style="list-style-type: none"> Meter freeway entrance ramps downstream of interchange target point for event traffic 	<ul style="list-style-type: none"> Reduces congestion caused by traffic merging with heavy freeway mainline traffic.
Late diverge prohibition	Ingress	<ul style="list-style-type: none"> Deploy traffic cones along barrier line extending upstream of exit ramp gore area. 	<ul style="list-style-type: none"> Reduces congestion at diverge ramp junction caused by motorists attempting to make a sudden lane-change to access an exit ramp. Improves safety.
Additional exit ramp lane	Ingress	<ul style="list-style-type: none"> Cone an additional lane on exit ramps serving traffic destined to an event venue. 	<ul style="list-style-type: none"> Provides additional ramp storage capacity. Proves particularly effective if two-lane ramp traffic does not have to merge at downstream end of ramp.



Figure 6-39
Temporary Elimination of Freeway Weaving Area



Figure 6-41
Remote Traffic Surveillance and Management



Figure 6-40
Prohibition of Late Freeway Diverge



Figure 6-42
Daily Reversible Lane Operation



Figure 6-43
Daily Contraflow Operation

The application of alternative lane operations to streets during a planned special event creates an express route between an event venue and high-capacity freeway/arterial corridors. For instance, Figure 6-44 shows contraflow operation used during event traffic egress to facilitate rapid clearance of venue parking areas. An alternative lane operation for freeways involves designating an “express lane(s)” for through traffic. Median crossovers at section termini permit access to designated reversible lanes. In order to avoid congestion at the downstream merge point, right-lane traffic diverts upstream of the merge via an exit ramp to another freeway or arterial. Though rare, stakeholders may consider alternative lane operations for freeways or other divided highways in rural areas only.



Figure 6-44
Contraflow Operation during Event Traffic Egress

Table 6-35 lists disadvantages of alternate lane operations on divided highways.

Table 6-35
Disadvantages of Divided Highway
Alternative Lane Operations⁽¹⁷⁾

CONSIDERATION
<ul style="list-style-type: none"> • Signs, pavement markings, and safety features will not necessarily be visible to drivers traveling in the opposite direction. • Safety appurtenances such as guide rail transitions, crash attenuators, and post support bases have not been designed to provide adequate protection at hazardous locations from the opposite direction of travel. • Outbound contraflow operation prohibits inbound emergency vehicle access. • Drivers will likely find operation confusing. • Nighttime operation is difficult to manage. • Cost to plan, design, and deploy operation is extensive.

Three key elements in developing an alternative lane operations plan include lane balance, markings, and enforcement. Key considerations regarding lane balance include:

- The success of any plan stems from *achieving lane balance* at the downstream terminus of a reversible lane or contraflow section. The number of lanes exiting an alternative lane section should not exceed the number of available receiving lanes at the end of the section. Otherwise, congestion will occur as a result of traffic merging at the section end.
- An alternative lane street section either terminates at a freeway interchange or street intersection.
- To effect lane balance, each lane in the alternative lane section must have a dedicated receiving lane. As a result, select travel lanes may become an exclusive turning lane at the end of the section.
- Temporary signing must inform motorists of lane destinations and restrictions

before they enter an alternative lane section.

The following represent common methods of designating reversible lanes:

- Lane control signals
- Roadside signing
- Physical markings such as traffic cones and movable barriers

Figure 6-45 illustrates the use of lane control signals for temporary reversible lane operation in a roadway construction zone. These signals assist motorists in gaining a clear understanding of the scope of reversible lane operation in effect. Similar lane control signal applications apply to planned special events as well.



Figure 6-45
Temporary Reversible Lane Operation with Lane Control Signals

Reversible lanes require additional enforcement, particularly at section termini. Law enforcement should monitor section operation and ensure drivers maintain a relative safe operating speed. This applies even when the alternative lane section operates congestion-free. If traffic cones delineate travel lanes, then high-speed traffic may strike cones or cause them to blow over.

Management and Monitoring

The management of traffic traversing a local flow route on the day-of-event involves route guidance and monitoring of traffic control initiatives.

Aside from equipment quantity limitations, local street right-of-way and the presence of lateral obstructions may limit the placement of portable CMS at regular intervals along a local flow route to guide drivers. Instead, the event planning team should design special route marker signs for guiding motorists to venue parking areas and pick-up/drop-off locations. Each route marker may consist of a color-coded letter or symbol. Figure 6-46 shows an example route marker sign for a particular special event parking area. When erected along a local flow route, the route marker assemblies collectively trailblaze a route to the drivers' destination of choice. As illustrated in Figure 6-47, signs that introduce each route marker should be placed on all freeway and arterial corridors serving the event venue. The event planning team must design and place all route marker assemblies in accordance with standards contained in the Manual on Uniform Traffic Control Devices. Sign fonts must be legible at free-flow travel speeds.



Figure 6-46
Route Marker Sign



Figure 6-47

Introduction of Route Marker Sign Symbols

The street network surrounding a planned special event venue likely encompasses multiple jurisdictions. In turn, multiple traffic operations and/or law enforcement agencies, representing the local, county, and state level, may participate in street operations control and management on the day-of-event. The event planning team and traffic management team must ensure the traffic control strategies outlined in agency-specific plans complement one another, including contingency actions.

Some larger cities have installed permanent CCTV cameras for monitoring and managing high-traffic arterial operations. Figure 6-48 shows the Daytona Beach, FL TMC that has access to CCTV video for select streets traversing the city. In areas not covered by land-based CCTV, the traffic management team may alternatively utilize aerial surveillance to monitor street operations. The use of law enforcement aircraft allows on-demand surveillance of street corridors. If a TMC and/or event command post can not access video from the aircraft, then the aircraft should carry personnel involved in preparing the traffic management plan. Such personnel can best assess plan effectiveness and transportation system operation at potential problem areas identified during advance planning.

The deployment of a portable traffic management system(s) (PTMS) provides a traffic management team with the capability of

monitoring traffic operations at critical roadway system locations in addition to disseminating updated traveler information at that location. Critical locations include target points connecting a corridor flow route and a local flow route or key driver decision points on the street network surrounding an event venue. Figure 6-49 shows a PTMS deployment. Table 6-36 lists typical PTMS components. Wireless communication via spread spectrum radio enables the traffic management team to view full-motion video from PTMS surveillance cameras.



Figure 6-48

Daytona Beach (FL) Transportation Management Center *(Photo courtesy of the Florida DOT.)*



Figure 6-49

Portable Traffic Management System⁽¹⁵⁾

Table 6-36
Portable Traffic Management System
Components

COMPONENT
<ul style="list-style-type: none"> • Surveillance camera • Changeable message sign • Highway advisory radio • Detection devices • Weather sensor • Flood lights • Power source (e.g., solar)

Intersection Traffic Control

A proactive approach toward developing strategies for controlling intersection traffic during a planned special event aims to:

- Increase intersection traffic handling capacity.
- Improve the orderly movement of traffic.
- Prevent crash occurrences.

The key to maximizing capacity involves simplifying traffic movements and minimizing the number of traffic signal phases. A typical 4-leg intersection has 32 conflict points. After prohibiting all left-turn movements and cross-street through movements, the same intersection has just 4 conflict points. As shown in Figure 6-50, lane channelization limits competing intersection traffic flow which, in turn, facilitates continual flow into a parking area access road or other road segment (e.g., alternative lane section).

Figure 6-51 presents an example, based on an intersection serving a Daytona International Speedway parking area, of achieving intersection turning movement lane balance. The plan shows three competing traffic flows that, with proper channelization applied, have unimpeded access to one receiving street segment. Given four receiving lanes, the channelization limited the number of approach lanes to four. When planning to use traffic cones or other channelizing devices

for intersection traffic control, mark-out device locations prior to the event for fast and accurate placement on the day-of-event.



Figure 6-50
Elimination of Competing Intersection
Traffic Flow

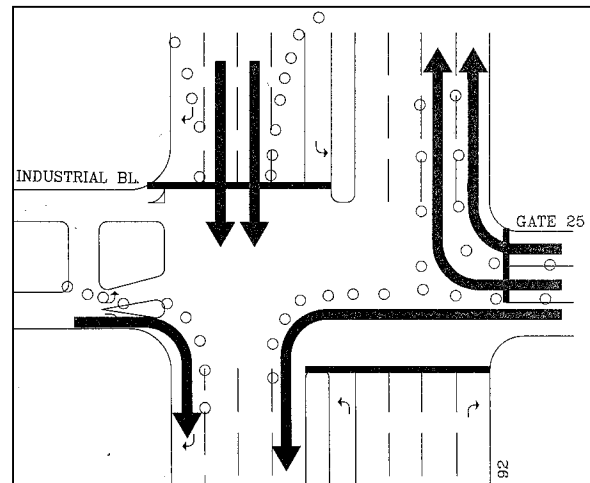


Figure 6-51
Turning Movement Lane Balance⁽¹⁸⁾

Stakeholders can also reduce the number of competing intersection traffic flow movements by initiating a planned road closure. Figure 6-52 illustrates this tactic, where law enforcement blocked a venue ingress route to facilitate event traffic egress through an intersection.

Advance signing of permitted intersection movements improves the orderly movement of traffic. This particularly applies to cases

when intersection operation on the day-of-event deviates significantly from daily operations. Figure 6-53 shows a high-visibility sign erected over an intersection approach contained in a planned egress route. Advance sign posting allows neighboring residents and local motorists to become familiar with planned day-of-event traffic control.



Figure 6-52
Road Block of Ingress Route to Facilitate Egress



Figure 6-53
Intersection Advance Signing

Traffic control officers have a large role in maximizing intersection operating efficiency. By using positive traffic control, as illustrated in Figure 6-54, officers guide motorists through an intersection. This minimizes headway between vehicles and reduces stops due to driver confusion, particularly at the downstream end of a reversible lane section. The officer commands a driver's attention and works to control the

speed of vehicles entering and departing the intersection, thus reducing rubbernecking.



Figure 6-54
Positive Traffic Control

Intersection traffic control changes from event ingress to egress operations. With regard to some street use events, particularly those involving a long event route and/or slow event pace, intersection traffic control complements a system of staged road closures along the event route. Law enforcement escorts the head and tail of the parade or street race. Traffic management team personnel deploy intersection traffic control a certain time (e.g., 15-30 minutes) before the head arrives and restores permitted intersection movements after the event tail clears.

Traffic Signal Operations

The significant change in traffic volume and flow patterns at street intersections in the vicinity of a planned special event venue during event ingress and egress mandates a review of traffic signal timing plans during the event operations planning phase. Except in isolated cases, traffic control officers should not manually control traffic signals on the day-of-event. Field decisions are difficult to make, and a manually controlled signal does not operate on a plan or in coordination with adjacent signals.

Advance traffic signal operations planning involve developing event traffic signal timing plans. Traffic signal timing plans should exist for a range of contingency scenarios that prioritize either major street or minor street traffic movements. Methods to increase time for a specific movement include: (1) selecting an existing plan with a longer cycle length to increase the normal favored phase, (2) implementing a custom plan favoring a minor street phase (3) deploying a contingency “flush” plan, consisting of an extra long phase or cycle, to facilitate movement through a corridor, and (4) increasing time for a movement through manual traffic signal system operator control. In traffic signal system-controlled corridors carrying high traffic volumes on the day-of-event, system operators may enact simultaneous coordination, where all signals within a single corridor turn green at the same time.

A successful traffic signal system management approach for planned special events involves providing a traffic signal system operator with access to real-time CCTV video of intersection operations. Appendix J contains sample protocol for the operation of a centralized traffic signal system, supplemented with permanent CCTV coverage at major intersections, in Anaheim, CA during a permanent venue event.⁽¹⁹⁾ If a real-time communication link to traffic signal controllers exist, then agencies can elect to mount a portable CCTV camera on a traffic signal pole, as shown in Figure 6-55, or other structure for day-of-event monitoring of intersection operations. Real-time monitoring ensures rapid implementation of appropriate timing plans and permits operator manual control as needed.

The traffic management team should include a traffic signal technician, available on the day-of-event for emergency maintenance. Also, the technician could facilitate timing plan downloads in the field, required for isolated signals or in the event that communica-

tions with a control center fail. The availability of a roving technician proves effective for making quick changes to traffic signal operations to meet user needs on the day-of-event. Prior to a planned special event, a technician should inspect traffic signals at critical locations, and operators should test traffic signal system control capabilities from the control center.



Figure 6-55
Portable CCTV Camera Mounted on Traffic Signal Pole⁽⁶⁾

Plan Specifications

The event planning team designs traffic control plans for use by the traffic management team and traffic control contractors. Table 6-37 contains a traffic control plan development checklist for freeway, street, and intersection management. Appendix K contains example traffic control plans and maps prepared for various planned special events.^(18,20) Because equipment demand varies on the day-of-event, traffic control plans should indicate equipment storage area locations and inventory remaining equipment available.

Table 6-37
Traffic Control Plan Checklist

ELEMENT	PROVISION
Freeway control plan	<ul style="list-style-type: none"> • Specify maintenance and protection of traffic per MUTCD guidelines (e.g., location of traffic control equipment, equipment quantities, and safety signs). • Indicate ramp control and capacity modifications. • Highlight exclusive traffic flows (e.g., unimpeded merge, etc.). • Dimension weaving area, acceleration/deceleration lane lengths, ramp length. • Indicate potential bottleneck locations for surveillance monitoring.
Street control plan	<ul style="list-style-type: none"> • Show closed road segments. • Indicate directional lane control (e.g., alternative lane operations). • Show one-way streets. • Indicate number of ingress and egress lanes at each venue access point (e.g., parking areas, pick-up/drop-off points). • Show street use event route. • Indicate parking restrictions. • Indicate location of command post(s). • Integrate with signing plan (e.g., show route trailblazer signs).
Intersection control plan	<ul style="list-style-type: none"> • Specify maintenance and protection of traffic per MUTCD guidelines (e.g., location of traffic control equipment, equipment quantities, and safety signs). • Show permitted pedestrian movements and crosswalk locations. • Indicate approach lane designations and pavement markings. • Indicate traffic control. • Highlight exclusive/permitted traffic flows (indicate approach lane and corresponding receiving lane). • State special regulations (e.g., turn prohibition, exclusive bus lane, resident/permit only movement). • Show approach closures. • Indicate parking restrictions. • Indicate location of traffic control officers. • Indicate location of equipment storage area at intersection.
Signing plan	<ul style="list-style-type: none"> • Show location of permanent/portable changeable message signs. • Show location of permanent/portable highway advisory radio stations. • Indicate CMS/HAR message sets. <ul style="list-style-type: none"> ○ Default ingress and egress ○ Contingency scenarios • Show location of temporary static signs and message. • Indicate location of dynamic blank-out signs.
Equipment location plan	<ul style="list-style-type: none"> • State number of traffic cones, drums, and barricades required at designated locations. <ul style="list-style-type: none"> ○ Indicate equipment staging areas (e.g., shoulder, median, intersection corner) • Indicate location of equipment storage areas.
Other considerations	<ul style="list-style-type: none"> • Provide plans for both ingress and egress operation. • Indicate roadway construction zones. • Include table of quantities. • Show aerial map. • Draw map to scale. • Display landmarks.

EN-ROUTE TRAVELER INFORMATION PLAN

Overview

The dissemination of traveler information for a planned special event is an integral part of operating and managing the transportation network. The following three issues must be considered in developing and maintaining the event plan:

- **Stakeholders** – The information needs of travelers extend well beyond an agency’s infrastructure and include other jurisdictions’ highway facilities, transit facilities, airports, etc. The private sector should also be an active partner in the traveler information process and must be included as a stakeholder.
- **Evaluation** – Care should be taken not to overestimate the benefits achieved by the implementation of information dissemination components in the plan. Specifically, it is important to recognize that travel patterns are quite dynamic and that some drivers will divert naturally when they encounter congestion regardless of whether or not they receive information beforehand about that congestion. A Washington, D.C. Advanced Traveler Information Systems (ATIS) study revealed:
 - *If ATIS deployments are evaluated purely on time-savings, the benefits of ATIS will likely be grossly underestimated.*
 - *ATIS users value improved travel reliability. The value of improved on-time reliability is not easily nor directly monetized, but it is clear that many types of travelers can benefit from ATIS.*
 - *Improved reliability and predictabil-*

ity of travel are also likely good surrogates for reduced driver stress. From this common sense perspective, it is clear that the benefit of improved travel reliability and predictability from ATIS will outweigh whatever small return is generated from the monetization of aggregate travel time reductions.

- **Performance Measures** – In order to assess the extent to which the traffic management plan efforts within are meeting goals and objectives, a set of performance criteria and measures-of-effectiveness pertaining to these efforts must be identified. Relative to coordination and information dissemination, performance criteria have three different, yet interrelated, dimensions that are of interest:
 - Information credibility – An information dissemination tool must be credible to travelers if it is to be utilized and have an impact upon traffic operations. The following criteria define how credibility is established: (1) the information must be accurate, (2) the information must be timely, and (3) the information must be relevant to its intended audience.
 - Market penetration – Market penetration refers to the percentage of the potential audience reached by the information dissemination efforts. Performance criteria regarding market penetration may be appropriate for evaluating certain system goals and technologies, particularly those emerging as part of ATIS. It is expected that some technologies, such as in-vehicle dynamic route guidance, will require only limited market penetration in order to achieve operational benefits. Other

operational benefits. Other technologies, such as information kiosks in major traffic generators, may require agencies to strive for as great a market penetration as possible in order to distribute the information to a wider audience and possibly attract private sector advertising and sponsorship.

- Traveler response – Ultimately, the purpose of providing information to travelers is to effect some change in traveler behavior that will cause an improvement in safety or operations. Thus, performance measures are also needed to determine the extent to which information dissemination accomplishes this purpose. Changes in traveler mode, departure time, and route (if appropriate) are appropriate for evaluating the effectiveness of real-time, travel-related information. However, it may be very difficult and expensive to obtain actual data for these measures. Traveler opinions about the effectiveness of the information being provided can be another important evaluation measure.
- It is important to recognize that because of the complex travel patterns of travelers at any point in the roadway, it may not be possible to adequately measure the overall effects of many types of information or dissemination modes upon traffic volumes, speeds, or delays. The day-to-day variances in travel patterns themselves may mask the effects of any information disseminated during a specific event such as an incident, particularly if the information is intended for a very specific audience (such as vehicles within a traffic stream destined for a specific downstream exit).

Information Needs

En-route traveler information can provide event patrons and other transportation system users with current roadway and transit information while traveling en-route. Information is typically provided via devices deployed along the side of the roadway, or from devices mounted on the dashboard of the vehicle. Along the roadway, changeable message signs and highway advisory radio messages typically provide information regarding an upcoming planned special event, including current conditions related to the special event such as traffic congestion, incident and construction locations, weather advisories, parking availability, and alternate routes. In-vehicle and personal mobile devices can provide a variety of en-route traveler information to both the traveler as well as transportation providers. Sophisticated route guidance systems can assist motorists in route planning as well as providing timely directions via a computer synthesized voice.

Static Signing

Static signs can be used for event management to inform travelers of an upcoming planned special event, to identify park & ride lots, and to guide motorists to particular locations. It is not uncommon for agencies to use static signing in special event management for the following purposes:

- Notify travelers of a future special event.
- Notify travelers of future facility changes for the event such as lane closures or occupancy restrictions.
- Identify special alternate routes for the event.
- Guide travelers to parking or park & ride lots.

Transportation incident responders utilize static signing in day-to-day operations to trailblaze motorists along an alternate route

or venue access route. These are temporary signs, mounted on fold-away supports, along the shoulder of the roadway or at exit gores to direct motorists to alternate routes as a matter of typical traffic management or in response to an incident and redirecting of traffic.

Changeable Message Signs

One of the most fundamental technologies available for disseminating traffic-related information from the roadside is that of changeable message signs. CMSs are sometimes referred to as dynamic message signs or variable message signs. CMSs are programmable traffic control devices that can usually display any combination of characters to present messages to motorists. These signs are either: (1) permanently installed above or on the side of the roadway, (2) portable devices attached to a trailer, or (3) portable devices mounted directly on a truck and driven to a desired location. Portable CMSs are much smaller than permanent CMSs and are oftentimes used in special event situations, highway work zones, when major crashes or natural disasters occur, and emergency situations.

When installed, CMSs become a part of the total motorist information system. Thus the information presented on CMSs and the placement of the signs must be consistent and compatible with static signs. Highway signs – both static and dynamic – must project a message so that the driver can:

1. Detect the sign,
2. Read and understand the sign,
3. Make appropriate decisions based on the information gained from the sign, and
4. If necessary, initiate a control response, and complete the required maneuver.

CMSs perform a critical role in special event management. Such signs can furnish motor-

ists with real-time information that advises them of a problem and in some cases, a suggested course of action. CMSs are also used to improve motorist safety and reduce traffic congestion and delay during events. CMSs can be used to manage traffic by displaying the following types of messages:

- **Early warning** messages give motorists advance notice of slow traffic and queuing ahead and are effective in reducing secondary crashes. When used in freeway work zones, early warning messages also give notice of new detours, changes in alternate routes, changes in lane patterns, special speed control measures, etc.
- **Advisory** messages provide motorists with useful information about a specific problem along their route. This information allows motorists to change their speed or path in advance of the problem area, or may encourage them to voluntarily take an alternate route to their destination.
- **Alternate route** messages influence motorists to travel to their chosen destination by using different routes than originally intended. The alternate route is one designated by the transportation agency. In cases when the freeway is physically closed as a result of construction, crash, or natural disaster, the motorists are notified that an alternate route *must* be used.

The most critical locations for installing permanent CMSs are in advance of interchanges or highways where drivers have the opportunity to take some action in response to messages displayed on CMSs. In many special event cases, permanent CMSs are already strategically located to advise event patrons of special conditions and non-event motorists of alternate bypass routes. Figure

6-56 shows a permanent CMS over an arterial located adjacent to a stadium venue and serving venue parking areas.



Figure 6-56

Permanent CMS Over Stadium Access Road

A CMS should not compete with existing roadway signs. In general, a CMS should be *permanently installed* at the following locations:

- Upstream from major decision points (e.g., exit ramps, freeway-to-freeway interchanges, or intersection of major routes that will allow drivers to take an alternate route)
- Upstream of bottlenecks, high-accident areas, and/or major special event facilities (e.g., stadiums, convention centers)
- Where regional information concerning weather conditions such as snow, ice, fog, wind, or dust is essential

Portable CMS

The use of trailer-mounted CMSs provides an agency with a great deal of flexibility. The signs, which are typically much smaller than permanent, over-the-road CMSs, are used most commonly for temporary applications. As such, portable CMSs are very suitable for special event management. They are usually diesel- or solar-powered and use wireless (cellular) communications

to a central management point, making them a very attractive and flexible tool.

Portable signs are usually located at the side of the road and do not sit as high as an overhead sign, which can impair drivers visibility. Most are 3-line, 8 or 9-character signs, and although most have the capability of displaying multiple phases, they tend to be used with simple short messages to allow drivers to read and comprehend the message.

Highway Advisory Radio

Although not as widely used as changeable message signs, highway advisory radio is another means of providing highway users with information in their vehicles. Traditionally, information is relayed to highway users through the AM radio receiver in their vehicles. Upstream of the HAR signal, users are instructed to tune their vehicle radios to a specific frequency via roadside or overhead signs. Usually, the information is relayed to the users by a prerecorded message, although live messages can also be broadcast.

Highway advisory radio is an effective tool for providing timely traffic and travel condition information to the public. It has various advantages and disadvantages. Its most important advantage is that it can reach more travelers, or potential travelers, than the other roadside technology, changeable message signs. While CMSs reach only those motorists at a particular point, and can only convey a short message, HAR has the advantage of being able to communicate with any person in the HAR broadcast range. Furthermore, the amount of information that can be conveyed to the user is much greater. Its primary disadvantage is that it is restricted to low power, and this can lead to poor signal quality (since many outside

forces affect the signal, such as weather) and, therefore, poor listener levels.

HAR is an element of the Federal Communication Commission's (FCC) Traveler Information Systems (TIS) designation. They are permitted under strict FCC guidelines and regulations associated with technology and operations. They are licensed as a secondary user, which means simply that they cannot interfere with a primary user, i.e., a commercial broadcast station. As a secondary user, HAR broadcasts are restricted in signal strength, a level that limits their transmission range to no more than three or four miles from the transmitter. A number of technologies are available for HAR transmission, using both AM and FM bands.

Typically, HAR has been implemented using 10-watt AM transmitters. This is because, beginning in 1977, it was the only technology permitted by the FCC for traveler information. As such, this technology implementation has also proven to be the most effective. Other means involve very-low power AM transmission, where multiple transmitters are spaced closely together to form a large area of coverage. This application, however, has not proven very successful. As late as 2000, the FCC ruled to allow the use of low-power FM transmission for TIS. This technology has limited application to-date.

Urban areas typically present a unique set of challenges to HAR application, which can hinder downtown event management. Tall buildings present an obstacle to uniform transmission since the FCC restricts antenna height to approximately fifty (50) feet. High-power electric lines can incur noise on the transmission that negatively impacts broadcast quality.

Deployment Strategies

HAR can be broadcast in two ways: Point or Wide-Area coverage.

- In Point broadcast, a single transmitter is used to broadcast over a given area. This is typically used at diversion points in advance of areas of recurring congestion to notify motorists of queues and congestion. This type of implementation is popular with travelers because the information is specific to them. This is the most common application for HAR, and it typically utilizes 10-Watt transmitters. It is the simplest to manage in terms of equipment to maintain.
- Wide Area Broadcast transmits a signal to a larger coverage area using multiple synchronized transmitters. This is an effective strategy when a single message is applicable to a large coverage area and the coverage area is sufficiently large for a motorist to hear the longer message length. The fact that a long single message, that is pertinent to specific travelers for only a part of the message, is indeed a disadvantage. Studies have shown that travelers want brief, specific information, pertinent to their location and situation. They are not likely to listen for long periods of time until their information is broadcast. Technically, synchronization is difficult to accomplish between transmitters because both the time and repeated voice signal must be in sync.

Both of these applications are practical and viable for planned special event management.

Portable and Mobile Systems

Portable systems permanently installed on trailers and mobile systems installed on service or maintenance vehicles can be of value in providing timely dissemination of infor-

mation to motorists during short-term deviations from normal highway conditions, or more specifically, during planned special events. These systems can be solar powered, generator powered, or battery powered.

Portable and/or mobile systems could be set up at decision points where a route guidance system directs motorists to an alternate route. This will increase motorist comfort level by reinforcing their confidence that they are following the alternate route instructions correctly.

HAR signs, indicating the frequency at which traffic information is available, are typically installed throughout each zone. These signs usually include flashing beacons that are activated only when a message of some predetermined level of importance is being broadcast and a legend reading (or similar) “TRAFFIC ALERT WHEN FLASHING.” This technique permits the system to continuously broadcast “default” messages in each zone during non-congestion periods, while alerting the motorist to an urgent/emergency message by turning on the flashing beacons. Thus the system prevents motorists from tuning to the HAR frequency only to hear the default message time and time again, situations that could negatively impact system credibility.

Changeable message signs can also be used to alert the motorist to the broadcast of a message of the utmost importance. These signs can be controlled through phone lines, or with cellular or paging technology, and can be solar powered with battery back up. They offer a great deal of flexibility, by allowing only the pertinent signs to be activated. For instance, while two signs (one in each direction) may be associated with a particular transmitter, only one would be activated for a downstream incident, thereby eliminating any loss in credibility due to providing a message that is not applicable to one of the directions of travel.

Media

The public has learned to depend upon the media to provide them with “almost” real-time traffic information. Commercial radio has proven to be a good means of providing travelers with traffic information both in and out of their vehicles. Traffic and roadway condition reports have become standard programming items on many commercial radio stations. Commercial radio has the best potential of reaching the greatest number of commuters, since most of them have radios in the vehicles they drive to and from work. It is not uncommon for planned special event stakeholders, including public agencies, to partner with a commercial radio station (or for a commercial radio station to sponsor a special event) to enhance the information dissemination related to the event and its transportation conditions. Care should be taken to ensure that the information disseminated reflects current traffic conditions and is credible.

Other Technology Applications

Other technology applications include:

- Cellular telephone-based systems
- 511
- In-vehicle displays
- Subscription services
- Personal data assistants

Telephone Based Traveler Information

An in-vehicle communication technology that has seen dramatic growth in the past few years is cellular telephones, which gives the motorist the ability to call special “hot-line” systems for traffic information from within their vehicle. Originally, these systems allowed motorists and transit users to call for information to assist in pre-trip decisions from their homes. Information can

now be accessed en-route via cellular telephone, and decisions can be made whether to alter travel routes. The creation of call-in systems has been a popular traffic impact mitigation strategy for many major urban freeway reconstruction projects in recent years.

This type of in-vehicle communication has the advantage over HAR of giving the motorist some control over the type and amount of information he/she wants to obtain through the touch-tone menus. In addition, it is also possible to generate two-way communication between the motorist and the information source.

Recommendations for establishing cellular telephone-based systems include the following:

- The call must be toll-free to users.
- The telephone number must be easy to remember and dial.
- The information must be concise.
- If a menu system is used, a long and tedious menu selection process should be avoided.
- A sufficient number of telephone lines should be provided to prevent the majority of users from receiving a busy signal.
- If a system is going to be used to gather information from users, there must be a method of ensuring the accuracy of the incoming information.
- “Official” use of tipster information should include procedures for verifying that information.
- If incident information is to be received, a human operator is recommended so that secondary questions can be asked to clarify confusing or unclear reports.

As with HAR systems, this technology also requires action by the motorist to access information. There are also significant operating costs associated with this technology, as

any calls made using cellular telephones must be paid for by either the motorist, or a public agency, or else absorbed by the corporation providing cellular telephone communication capabilities in the region. Finally, there is some concern that cellular telephone usage while driving may degrade motorist attention and operating capabilities. Manufacturers have developed “hands-free” telephones that allow motorists to listen and talk without holding the telephone receiver, although the need to push the telephone buttons to go through a menu of information operations can defeat the “safety” purpose behind hands-free devices.

Many metropolitan areas established cellular “hotlines” for motorists to call in and report traffic incident information to the highway agency. Examples included #77 and *SP. However, the establishment of the 511 national traveler information number is envisioned to replace these already established numbers.

511

Understanding the importance of consistency and simplicity in providing telephone-based traveler information, in 1999, the U.S. Department of Transportation (USDOT) petitioned the FCC to designate a nationwide three-digit telephone number for traveler information. This petition was formally supported by 17 state DOTs, 32 transit operators, and 23 Metropolitan Planning Organizations and local agencies. On July 21, 2000 the FCC designated 511 as the national traveler information number.

Simply put, 511 represents an abbreviated three-digit dialing code that is a short cut to a ten-digit telephone number for obtaining traveler information from a telephone. In petitioning the FCC, USDOT had to demonstrate the need and benefits for such a number. To that end, the USDOT identified the following:⁽²¹⁾

Further benefits are realized. 511 puts a “face” on ITS and transportation operations, while increasing attention on the potential for traveler information services. With 511, transportation agencies can offer easier access to information via telephone, and have the same number work in multiple places. It is not uncommon for traveler information numbers to change across jurisdictional boundaries, creating confusion among motorists.

In-Vehicle Displays

A video display terminal (VDT) mounted in the dashboard is another form for communicating with motorists in their vehicles. This is primarily a private sector industry, which has not been used widely for information distribution. These systems can be used to provide motorists with route guidance and navigational information in one of two different formats. One approach is to present the driver navigation and route guidance information in the form of maps or equivalent displays. With these systems, a global picture of the traffic network can be provided. Recommended routes can be highlighted on the video map display as well. In another approach, simple symbolic signals (e.g., arrows, text instructions, or a combination of both) guide the driver along a recommended route. Some prototype systems use a variety of displays depending upon whether or not the vehicle is in motion, the functions selected, and level of informational and navigational displays available.

In-vehicle VDTs offer a number of advantages over available technologies in providing information to motorists while driving. These include the following:

- Travel information is more readily accessible to the driver (providing continuous access to current position, rout-

ing, and navigational information).

- Computer-generated navigational maps and displays are logical extensions of traditional forms of providing drivers with route guidance and navigation information.

Information can be displayed in text, graphics, or both and tailored to the needs and desires of each motorist. There are also limitations to in-vehicle VDTs. These include the following:

- Drivers have to take their eyes off the roadway in order to receive the information.
- In-vehicle VDTs present the driver with complex maps and diagrams that may create a potential to overload the driver with too much information.
- VDTs may also add to the visual clutter already inside the vehicle.

As technology continues to improve, the Head-Up Display (HUD) has become another alternative to in-vehicle VDTs for presenting visual navigational and route guidance information to motorists. Although originally developed for the aviation industry, several automobile manufacturers are beginning to develop HUDs for presenting vehicle status and navigational information to drivers.

A wide variety of options for displaying information may be available using HUDs. Through both icons and alphanumeric text, navigation and route guidance information may be projected directly into the driver’s field of view. This is expected to reduce the need for visual scanning between two information sources (the inside instrument panel and the outside environment) and the associated visual accommodation time.

Subscription Services

A number of private providers supply traveler information services on-demand as a subscription. Most notably, General Motors' (GM) OnStar is a 24 hours a day, 7 days a week motorist assistance system installed in the vehicle. It provides a wide range of services to the driver, including concierge service, telephone service, remote unlocking of the car, and notification of air-bag deployment just to name a few.

Another feature OnStar provides is route guidance to motorists. Here, the motorist initiates a call from a button installed in the car, is connected to a live Onstar operator, and proceeds to ask for directions. The operator knows the vehicle's location through OnStar's automated vehicle location system and provides directions for the fastest route. OnStar currently uses a third-party wireless analog network and is moving to a digital technology, which will allow the service to be expanded to handheld devices as well. Presently, 53 current (2003) vehicle models are offered with OnStar, and GM intends to expand to 60 models by the end of 2003. Routing assistance is the most utilized service, and OnStar reports that it handles more than 220,000 routing calls per month.⁽²²⁾

Personal Data Assistants

Personal Data Assistants (PDAs) are the next higher level of sophistication in both off and on-roadway information dissemination technology. PDAs are computer products that have enough power to support applications such as time management and handwriting recognition. By adding radio frequency (RF) communications technology, PDAs allow users to interact directly with travel information systems. This interaction allows users to obtain route planning assistance, traffic information broadcasts, and other pertinent information. Through keypad entry, the user can log on to the infor-

mation system, request pertinent information, and then log off. PDAs offer the user increased communication and information transmission/receiving power over alphanumeric pagers.

Plan Specifications

An en-route traveler information plan must be developed in concert with the traffic flow plan and traffic control plan. The success of any traffic management plan depends on disseminating correct information to motorists at the right time and location.

Items to be included in this plan include:

- Names of contact person(s) for each involved partner
- Protocols and methods to be utilized to coordinate
- Definition of each partner's responsibilities regarding control and information exchange

Detailed plans are necessary that identify the facilities and resources to be used. For instance, what permanent CMS or HAR are to be used and what holes exist in the information dissemination strategy? Where will portable devices be required? Traveler information plans must include planned message sets for equipment and technology used to disseminate en-route traveler information, including static signs, changeable message signs, highway advisory radio, and telephone information systems.

As in the desktop exercise and modeling analyses, various scenarios must be examined, and as a result, specific tactical strategies will be developed. Of particular importance in planned special event management is the creation of information messages for the various devices available to the manager. This includes changeable message sign messages, highway advisory radio messages,

Internet and PDA messages. Each of these must be developed for various scenarios, including contingency ramp closures, full parking lots, and emergency situations. The traveler information plan may also specify protocol for disseminating traveler information via the media.

TRAFFIC SURVEILLANCE PLAN



A traffic surveillance plan can include:

- Closed-circuit television systems
- Field observation
- Aerial observation
- Media reports

Closed-Circuit Television Systems

Closed-circuit television systems have been used for many years to provide visual surveillance of the highway network. Control centers typically use CCTV systems for the following purposes:

- Detection and verification of incidents
- Monitoring traffic conditions
- Monitoring incident clearance
- Verifying message displays on changeable message signs

For fixed location CCTV systems, video cameras are permanently mounted either on existing structures along the roadway or on specially installed camera poles. This type of system consists of various components, including the following:

- Video camera unit
- Mounting structure (existing or installed)
- Controller cabinet housing the control equipment
- Communication system connecting camera to control center

- Video monitors and camera controls located in control center

CCTV systems allow operations personnel to visually monitor sections of roadway and to react directly to the actual conditions on the roadway. Since operators can lose interest if required to constantly view CCTV monitors, and may fail to notice incidents immediately after they occur, current systems are being designed to automatically position cameras at suspected incident locations (as signaled by incident detection algorithms) and to alert the operator.

Portable CCTV Systems

Portable CCTV systems can serve several purposes including the following:

- Short-term traffic monitoring in areas with non-recurring congestion (e.g., corridor serving a planned special event venue, work zone, critical incident, detours, etc.)
- Traffic monitoring at special traffic generators for planned special events
- Traffic monitoring along evacuation routes
- Determination of optimum camera location for fixed location CCTV systems

Portable CCTV systems are typically mounted in a light truck or van or on a trailer. Components of a portable system include the following:

- Camera with pan-tilt-zoom capability
- Telescopic boom
- Television monitor
- Video recorder
- Camera control unit for controlling pan, tilt, and zoom functions
- Generator for powering equipment; or battery power with solar charging
- Air compressor for operating telescopic boom

- Wireless communications (It should be noted that during planned special events, cellular capacity is strained, and as such, there is a risk of failing communications to portable surveillance systems with cellular communications.)

Figure 6-57 shows a portable CCTV camera, mounted on an overhead sign structure, used for freeway surveillance during a planned special event.



Figure 6-57
Portable CCTV Camera for Freeway Surveillance

Temporary CCTV camera installation requires consideration of video image transmission, and limited communications options may exist. Telephone lines and cellular channels facilitate the transmission of compressed or slow scan video. The transmission of real-time motion video requires infrastructure such as fiber optic cable, coaxial cable, or wireless (e.g., spread spectrum radio).

Closed-circuit television surveillance is a very valuable planned special event management tool for observing real-time conditions related to special event corridors, alternate routes, parking and pedestrian conditions, as well as for a verification tool for messages placed on changeable message signs.

Field Observation

A common and efficient technique to observe the traffic conditions during a planned special event is to place human observers, or detectors, in the field, usually at critical locations. Normally, these observers have the role of monitoring conditions and reporting back to a central location for strategic assessment. These human detectors are gathering relevant information related to the event and using established protocol to communicate the information back to the central processing and coordination facility.

It is common to deploy these observers where technology is lacking and where they may perform an additional role in traffic management or traffic incident management (e.g., freeway service patrol operators). For instance, an observer may be placed at a critical pedestrian location, where besides reporting back to central command on the status of the location, the observer may serve the role of a traffic engineer by adjusting the signal timing to better accommodate the pedestrian volumes.

Aerial Observation

Aerial surveillance has long been used to monitor the operation of the surface transportation network. “Observers” in aircraft (fixed wing or helicopters) fly over freeways and streets and monitor conditions in real-time, using two-way radios to communicate with the TMC or with service patrols on the freeway. This approach can be relatively expensive when one considers the expense of leasing or operating an aircraft, although it does have the benefit of being able to cover a large area.

An emerging trend is the use of remote sensing via *unmanned* aerial vehicles, similar to airborne platforms/drones used by the military, and satellites. Information gathered

from satellite, aircraft, and unmanned aerial vehicles can be used to estimate arterial and freeway traffic characteristics over long time scales and large geographic areas, including those where data were previously unavailable. The spatial coverage provided from air- and satellite-based sensors can potentially support the development of new metrics that better represent highway utilization and congestion.

Media Reports

As discussed earlier, the media needs to be a partner in the planned special event management and operations effort. Agreements must be in place that define their role within the plan, as well as what information needs to be communicated, both prior to and during the event.

The primary disadvantage of using the media relates to the accuracy of the information. Traffic reports often are transmitted only when normal scheduling permits. This may cause considerable time delays between when a condition changes and when the media reports it. Often, many problems go unreported or are cleared by the time they are reported on the radio and television. The accuracy of the information provided by commercial radio, for instance, is a function of the time between the broadcaster's last communication with the incident reporting source and the number of incidents that have occurred and/or have been cleared during that time.

Some transportation agencies have made substantial efforts to improve coordination and cooperation between themselves and the media traffic reporters. For example, some agencies allow private traffic advisory services to place personnel in the TMC to obtain information on traffic conditions and expected agency responses in an accurate and timely manner.

TRAFFIC INCIDENT MANAGEMENT AND SAFETY PLAN

Overview

The occurrence of a planned special event that increases or disrupts the normal flow of traffic places a premium on the optimal use of existing facilities. A traffic incident and safety plan specifies crash prevention tactics and traffic incident quick clearance initiatives, some of which denote special provisions enacted just for the day-of-event. These traffic incident management techniques preserve two goals of managing travel for planned special events: (1) ensuring safety and (2) maximizing efficiency. In the event of a major traffic incident that blocks travel lanes for a prolonged duration, the traffic management team should refer to response procedures and guidelines contained in an established traffic incident management manual for the region.

Crash Prevention Tactics

Crash prevention tactics focus on improving driver awareness of surroundings and driver behavior. Table 6-38 lists crash prevention tactics applicable to planned special events.

Table 6-38
Crash Prevention Tactics

TACTIC
<ul style="list-style-type: none"> • Portable lighting • Congestion warning sign • Public information safety campaign • Enforcement

Portable Lighting

Portable lighting devices enhance driver understanding of traffic control and traffic flow patterns at night. As shown in Figure 6-58, the devices prove particularly useful at rural,

unlit freeway interchanges or arterial target points that handle high-volume turning movements during event ingress and egress. Portable lighting makes traffic control officers more visible to approaching drivers, and in the vicinity of the event venue, the devices can spotlight pedestrian/vehicular conflict areas.



Figure 6-58
Portable Lighting (Photo courtesy of the Wisconsin DOT.)

Congestion Warning Signs

Congestion warning signs, placed upstream of known roadway bottleneck locations, alert drivers of demand-induced congestion on the day-of-event. The tactic aims to prevent rear-end crashes as a result of drivers encountering unexpected congestion. Stakeholders should strongly consider deploying congestion warning signs along event ingress and egress routes containing significant geometric curves. In order to control message display and preserve its credibility, consider deploying portable changeable message signs or static signs that hinge open, as shown in Figure 6-59.

Public Information Safety Campaign

A public information safety campaign strives to change motorists' behavior when traveling to and from a planned special event. Campaigns emphasize event traffic

control and regulations, pedestrian safety, and vehicle operation. For example, the Louisiana DOT launched a \$94,000 public information campaign in 2002 to reduce the number of crashes caused by drivers following too closely.⁽²³⁾ The campaign targeted spectators attending Louisiana State University football games through advertisements on radio stations carrying the games and advertisements in game-day football programs. The advertisements specified driver tips on how to avoid tailgating.



Figure 6-59
Congestion Warning Sign

Enforcement

Enforcement aims at preventing drivers from executing illegal and dangerous movements in an effort to bypass congestion and/or day-of-event traffic control. For instance, drivers attempting to access a freeway may travel past a congested entrance ramp serving egress traffic, make an illegal U-turn, and traverse an uncongested freeway entrance ramp from the opposite direction. The behavior of one motorist provokes other motorists to execute the same maneuver.

Service Patrols

Service patrols function to typically satisfy the incident detection, verification, response, and removal components of incident management in the event of a minor incident,

such as a vehicle disablement or property-damage-only crash. Patrol operators strive to identify and remove debris or hazards impeding traffic flow, and they aid in the fast removal of immobilized or wrecked passenger cars blocking one or more travel lanes. Service patrol programs create a sense of security for motorists in addition to improving public relations for the service's sponsor. Other examples of motorist assists that are typically offered free of charge include supplying fuel, changing flat tires, providing a jump-start, and calling private towing companies.

Service patrols can play a key role in traffic incident management for planned special events. The service has great versatility, and patrol operators can satisfy a wide range of traffic management team needs. For example, operators can assist in establishing day-of-event traffic control, performing traffic surveillance, and providing timely traffic condition reports from various remote locations. As shown in Figure 6-60, service patrols carry equipment to support traffic management at incident sites and congestion locations.

Table 6-39 indicates considerations in preparing a service patrol operations plan for a planned special event. To avoid having drivers abandon disabled vehicles or risk exposure to adjacent traffic flow, stakeholders should alert roadway users of service patrol operation on the day-of-event via roadside traveler information devices. Figure 6-61 shows a special event HAR message disseminating safety tips to drivers and promoting service patrol operation.



Figure 6-60
Service Patrol Vehicle (*Graphic courtesy of the Minnesota DOT.*)

Table 6-39
Service Patrol Operations Considerations

CONSIDERATION
<ul style="list-style-type: none"> • Number of service patrols deployed • Time of operation • Patrol routes and/or staging location • Storage of towed vehicles • Operator communication with TMC or event command center

Figure 6-61

THIS IS TRIMARC WITH A SPECIAL TRAFFIC ANNOUNCEMENT FOR SATURDAY MAY 4TH. WELCOME TO LOUISVILLE ON DERBY DAY. THE RACES ARE NOW ENDING. EXPECT HEAVY AND SLOW MOVING TRAFFIC ON I-264 AND I-65. BE PREPARED FOR SUDDEN STOPS.

IF YOU EXPERIENCE CAR PROBLEMS, REMAIN WITH YOUR VEHICLE AND RAISE THE HOOD. THERE ARE SERVICE PATROL VANS ON THE INTERSTATE TO PROVIDE FREE ASSISTANCE.

Highway Advisory Radio Traveler Safety Message⁽²⁴⁾

Traffic Incident Quick Clearance Initiatives

Quick clearance is the practice of rapidly and safely removing temporary obstructions from the roadway.⁽²⁵⁾ Quick clearance practices increase the safety of traffic incident responders and victims by minimizing their exposure to adjacent passing traffic. A reduced probability of secondary incidents accompanies decreased congestion levels resulting from fast removal of lane-blocking obstructions.

A quick clearance practice consists of laws, policies, procedures, and infrastructure aimed at effecting the safe and timely removal of a traffic incident. Service patrols, as previously described, represent a quick clearance infrastructure component. Rapid clearance of traffic incidents during planned special event ingress and egress avoids significant impact to corridor and local traffic flow routes in addition to routes used by participants and VIPs.

The following quick clearance initiatives benefit traffic incident management in high-volume corridors, characteristic of planned special events: (1) vehicle/cargo removal laws and policies, (2) stakeholder open roads policy, and (3) public-private towing contracts. Vehicle removal laws require drivers to immediately move vehicles obstructing travel lanes. Also, agencies have authority to aggressively clear vehicles and spilled cargo without incurring unnecessary delay. Similar policies establish no stopping zones in highly traveled locations. An inter-agency open roads policy informs traffic incident responders of the urgent need to rapidly remove disabled or wrecked vehicles, spilled cargo, and debris that obstruct the normal flow of traffic, and the policy disseminates key guidelines to ensure a cooperative incident removal effort between

agencies. Chapter 5 discusses contract towing service for planned special events.

Practitioners should consult NCHRP Synthesis 318, *Safe and Quick Clearance of Traffic Incidents*, for state-of-the-practice information about laws, policies, procedures, infrastructure, and technologies associated with developing a quick clearance practice and increasing the efficiency of traffic incident removal operations.⁽²⁵⁾

Quick clearance represented the overarching theme within the Utah DOT traffic incident management plan for the 2002 Winter Olympics. Table 6-40 summarizes some notable quick clearance strategies contained in the event traffic incident management plan. The table also states statistics and performance measures that conclude the Utah DOT, together with its partner law enforcement and transportation agencies, developed and deployed a successful quick clearance practice for the Olympics.

Table 6-40
Traffic Incident Quick Clearance for the 2002 Winter Olympics⁽²⁶⁾

STRATEGY
<ul style="list-style-type: none"> • Staging of heavy-duty tow trucks throughout Olympic venue routes between 5:00 AM and 1:00 PM (ingress). • Carrying of kits by incident responders to tow every type of bus used to transport people. • Use of photogrammetry by law enforcement during incident investigations. • Deployment of heavy service patrol coverage to reduce the number of abandoned vehicles and lessen security concerns.
EVALUATION STATISTIC
<ul style="list-style-type: none"> • 29 vehicles were removed from incident scenes on the athlete routes to facilitate traffic flow. • 12 fatality or critical crashes were investigated by law enforcement using photogrammetry in under one hour, and in one case, police shot an incident scene with evidence markers within 30 minutes. • A serious injury crash was cleared in 23 minutes because of excellent teamwork. • Incident Management Team crews spent an average of 70 minutes at each crash scene during the Games, down from an average of 115 minutes prior to the Games. • 2,306 motorists were assisted during the 17 days of the Games.

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CHAPTER SEVEN

TRAVEL DEMAND MANAGEMENT AND TRAVELER INFORMATION



Figure 7-1
Planned Special Event Express Bus Service from Park and Ride Lot

PURPOSE

This third chapter on event operations planning reviews strategies for: (1) mitigating the travel demand impacts of planned special events and (2) ensuring the transportation system operates as efficiently as possible on the day-of-event. Successful strategies are presented in three sections that influence travel choice utility; *travel demand management*, *transit service*, and *pre-trip traveler information*. These initiatives enhance transportation system operations and improve customer service for all users by utilizing all available system resources and excess capacity. The identification and successful promotion of travel demand man-

agement initiatives can reduce traffic demand and, in turn, improve system efficiency and travel time reliability.

INTRODUCTION

Travel Demand Management (TDM) represents a key component of the overall advance planning process when forecasted traffic demand levels approach or exceed available road capacity. TDM strategies may be warranted for planned special events occurring during peak travel times, continuous events located in downtown areas, street use events of long duration, regional/multi-venue events, and special events in rural areas having limited transportation system capacity. The goal is to optimize event patron

and non-attendee travel through incentives aimed at consolidating person trips and altering user travel patterns and habits, while minimizing any penalties to the user.

Transit service for a particular planned special event includes: (1) public transit service expansion or modification, (2) express buses from area neighborhoods or park and ride lots, and (3) charter bus service from other cities and counties. These services, though configured to net operators a profit, represent a travel demand management initiative. The goal of transit operators involve designing a special event service and related incentives to not only improve the travel choice utility associated with using transit, but also to exceed the utility (e.g., travel time, parking fees, comfort, etc.) associated with traveling via personal automobile. Successful transit services collectively may result in a significant change in event patron modal split without impacting service to non-attendee users.

The availability of pre-trip travel information, consisting of essential event operations and real-time traffic information, proves effective in assisting event patron evaluation of potential travel options, trip departure times, and travel routes to the event venue. Similarly, other road users, seeking to minimize event-related impacts to their trip, value this information.

TDM, transit, and pre-trip traveler information initiatives complement one another and work to reduce traffic on the roadway network in the vicinity of the event. These initiatives are not infrastructure improvements to increase capacity, but rather are methods that decrease vehicular traffic by providing event patrons with various travel choices as well as providing information that may lead to a reduction in traffic volumes. Some of these strategies are implemented by: (1) the public agency involved with the special event, (2) the event planners themselves, and (3) a combination of both groups.

TRAVEL DEMAND MANAGEMENT

Overview

TDM strategies are used to maximize the efficiency of the transportation system, thus reducing the volume of traffic on the roadway and minimizing the peak demand rates that cause congestion. They do not represent infrastructure improvements to increase capacity, but rather are methods that cause traffic demand reduction by encouraging other travel mode choices, particularly for event patrons. As shown in Table 7-1, TDM techniques for planned special events involve two distinct groups.

Table 7-1
Travel Demand Management Goals

USER GROUP	TRIP PURPOSE	TDM GOAL
Event patrons	<ul style="list-style-type: none"> Traveling to the event itself 	<ul style="list-style-type: none"> Encourage the use of travel modes other than personal automobile. Encourage a shift in arrival and departure times to reduce peak traffic volumes. Increase vehicle occupancy.
Non-attendee road users	<ul style="list-style-type: none"> Traveling for reasons other than the event itself 	<ul style="list-style-type: none"> Divert non-attendee travelers around the impacted area. Alter non-attendee time of travel to avoid conflict with event peak ingress and egress times.

Demand Management Strategies

Successful TDM strategies, developed to reduce the amount of event patron traffic, encourage the use of alternate travel modes. Essentially, a successful, integrated plan includes, for example, providing convenient alternates to driving an automobile to the event site and encouraging the use of these alternate travel modes. This includes increases in scheduled public transit service. In addition, express bus service can also be provided from park and ride lots to the event site as well as charter buses traveling to the event site from outlying areas. TDM strategies are also used to influence the travel patterns of non-attendee road users by encouraging a trip time shift or a change in travel mode. The resulting reduction in traffic demand reduces travel times for both event patrons and non-attendee road users. TDM also reduces delay, increases levels of safety, decreases motorist stress levels, reduces fuel consumption, and decreases certain vehicle emissions.

Table 7-2 contains a summary of travel demand management strategies.

High Occupancy Vehicle Incentives

The ultimate goal of any high occupancy vehicle (HOV) strategy is to increase the number of persons traveling in each vehicle. One option to reduce the amount of vehicles on the roadway is to encourage HOV use. In some areas, limited-access highways include HOV lanes to increase the attractiveness and efficiency of carpooling and vanpooling. Many of these HOV lanes are intended to assist commuters on a daily basis and, as such, the hours of the HOV may be limited to weekday commuting hours. In the case of a major planned special event, consideration should be given to continuing the HOV restrictions on these lanes to later

weekday hours, or even into weekend hours, in order to encourage event patrons to carpool.

Incentives can be provided to encourage two or more persons per vehicle. Figure 7-2 illustrates one such example. The Suffolk County Fair and a radio station (WALK) in New York offered a promotion of \$40 per carload on certain days. This price included parking, fair admission, and unlimited rides for everyone in the vehicle. In this manner, it was not economically feasible to travel alone, but rather to travel with as many people as possible in one vehicle.

Another strategy to encourage HOV's involves offering special privileges at the event site. Special parking lots can be restricted to HOV only, and these lots may be located nearer to the venue in order to encourage carpools. Lower parking rates further increase the attractiveness of this initiative. Private parking lot operators can be persuaded to offer special HOV pricing in exchange for promotion in special event advertisements. As demonstrated by Figure 7-3, this information needs to be relayed to the public so that they know the advantages of carpooling to the event site.

One successful implementation of HOV incentives took place at Husky Stadium on the campus of the University of Washington in Seattle for football games.⁽¹⁾ The Transportation Management Plan (TMP) included a parking pricing system to provide financial incentives for carpooling. During the 2000 football season, parking on campus cost \$7 for vehicles with three or more persons and \$10 for vehicles with less than three persons. Operators charged \$17 for parking a recreational vehicle and \$20 for buses, regardless of the number of people in the vehicle. In addition to the cost incentives, a marketing plan was also developed to encourage carpooling. Messages such as "carpools save

Table 7-2
Travel Demand Management Strategies

STRATEGY	DESCRIPTION	TECHNIQUES	USER GROUP
High occupancy vehicle (HOV) incentives	<ul style="list-style-type: none"> Increase the number of persons traveling in each vehicle. 	<ul style="list-style-type: none"> Consider continuing HOV restrictions on HOV lanes to later weekday hours, or even into weekend hours, in order to encourage event patrons to carpool. Reduce parking fees for vehicles with more than two people. Provide free advertising for private lots to balance discounts given for HOV parking. 	<ul style="list-style-type: none"> Event patrons Non-attendee road users
Event patron incentives	<ul style="list-style-type: none"> Encourage event patrons to arrive early or leave late in order to reduce peak traffic demand. 	<ul style="list-style-type: none"> Consider departure strategies that encourage spectators to stay late after an event: <ul style="list-style-type: none"> Post-event fireworks or concert Special programming on stadium video screens “Meet the mascot” promotion for children Special discount with a ticket stub at nearby restaurants and pubs Extended parking, at no additional cost, for event goers to encourage their patronage of downtown restaurants and shops after an event. Consider arrival strategies that encourage spectators to arrive early before an event: <ul style="list-style-type: none"> Registration in free drawings and contests that occur before the event Early opening of venue restaurants and/or offering of special discounts Tailgating encouraged in venue parking areas Encouraging spectators to watch teams warm-up before the game 	<ul style="list-style-type: none"> Event patrons
Bicyclist accommodation	<ul style="list-style-type: none"> Encourage the use of bicycles in traveling to/from the event. 	<ul style="list-style-type: none"> Provide proper bicycle paths (existing and temporary). Maximization of safety for bicyclists Avoidance of roadways with higher traffic volumes due to the event Provide security in bicycle parking areas. <ul style="list-style-type: none"> Staffing to prevent bicycle theft Locate bicycle parking close to venue entrance. Provide bicycle racks on transit buses to allow spectators to access mass transit while carrying a bicycle. 	<ul style="list-style-type: none"> Event patrons
Local travel demand management	<ul style="list-style-type: none"> Increase the use of public transit. Encourage car pools. Shift work hours. Shift commercial truck travel routes and delivery schedules. 	<ul style="list-style-type: none"> Encourage alternate travel choices. <ul style="list-style-type: none"> Avoidance of travel during times of event ingress and egress Avoidance of travel near event venue Encourage businesses to implement TDM strategies. <ul style="list-style-type: none"> Telecommuting Carpooling Flexible hours Modified delivery schedules Early release from work on event dates for infrequent night events Use media to announce alternate routes to and around the event. Contact commercial trucking companies. <ul style="list-style-type: none"> Times to avoid routes serving the event venue Reduction of number of truck trips Shifting of some truck trips to nighttime (non-event) hours. 	<ul style="list-style-type: none"> Non-attendee road users



Figure 7-2
High Occupancy Vehicle Incentive

time and money and are a lot more fun than going alone” were incorporated into the Husky football transportation guide.

In addition to the plan implemented for University of Washington football games, a similar plan was implemented for Seattle Seahawks football games during the 2000-2001 season when stadium construction forced the Seahawks to use Husky Stadium for home games. The public information campaign for Seahawks football included a summary of available parking in the vicinity of the stadium. Since the Seahawks were playing in a temporary stadium, fans had to be oriented to: (1) new traffic flow routes to access the stadium and (2) new event parking locations and costs. A public information campaign outlined Husky Stadium parking limitations, including only 9,000 on-campus spaces being provided as compared to the 11,000 free on-street parking spaces

and 35,000 off-street parking spaces around the Seahawks original stadium. Carpool parking pricing incentives were established similar to those used for University of Washington football games. At the beginning of the season, game day parking was \$15 for carpools with three or more persons per vehicle and \$20 for vehicles with less than three persons. Stakeholders reduced the carpool parking fee in mid-season to \$10 in an effort to increase higher vehicle occupancy.

In addition to venue operators offering HOV privileges at venue parking areas, private parking operators in the site area can also be encouraged to offer special incentives to event patrons. For example, if private lot operators offer a special HOV discount, then the event advertisements can mention that particular private lot by name and location. The “free advertising” may help private operators balance discounts given for HOV parking.

Thus, three high occupancy vehicle incentive techniques include:

- Consider continuing HOV restrictions on HOV lanes to later weekday hours, or even into weekend hours, in order to encourage event patrons to carpool.
- Reduce parking fees for vehicles with more than two people.
- Provide free advertising for private lots to balance discounts given for HOV parking.

Carpool and save even more! Each time you arrive with two or more other passengers you'll receive a coupon for \$3 off next year's Guaranteed Sonics Parking pass. A potential **savings** of almost **\$130!**

Figure 7-3
High Occupancy Vehicle Parking Incentive (Graphic courtesy of the Seattle Center.)

Event Patron Incentives

Stakeholders managing discrete/recurring events at a permanent venue that generate high peak arrival and departure rates can encourage event patrons to *arrive early or leave late* in order to reduce the peak traffic demand.

Sporting events and concerts fall into this category given that, when the game or show ends, the majority of event patrons leave the venue at one time. This departure pattern scenario can be offset using several strategies:

- For instance, event organizers or venue operators can offer special incentives for spectators to stay after the event, such as special programming on the stadium video screens or post-event fireworks.
- Restaurants and pubs located in or near the event venue can remain open and may even offer special price savings with a ticket stub.
- Some sporting events and other types of events may feature live music after games in order to encourage spectators to remain at the venue.
- One incentive for parents to remain longer at sporting events with their children is a “meet the mascot” type of promotion.
- Venues in downtown areas can also provide extended parking, at no additional cost, for event patrons who wish to remain in the area and go to downtown restaurants or shops. Instead of parking lots having to be vacated a certain time after the event, extended parking hours allow event patrons to linger in the surrounding downtown area. These incentives help to spread out the flow of departing traffic and lessen the peak traffic demand on the roadway network. This

concept also benefits businesses in the vicinity of the event venue.

Incentives that can be used to attract patrons to events earlier than usual include:

- Registration in free drawings and contests that occur before the event to attract spectators to the event site.
- Venue restaurants can open early and offer special incentives to attract spectators before the event.
- Tailgating may also be encouraged to attract event patrons to venue parking areas hours before the actual start of the event.
- Organizers of sporting events can encourage spectators to arrive early and watch teams warm-up before the game.

Venues that do not have pre- or post-event activities can solicit suggestions from the public through mailings or via the venue website. For example, when season ticket applications or tickets to the event are mailed, an accompanying survey can ask event patrons which type of pre- or post-game activities they would be more likely to take advantage of. Similar types of questions can also be presented on an event or venue website, as illustrated in Figure 7-4. As a result, the pre- or post-game events will cater to the persons who actually attend the event, thus increasing the number of spectators attending staged activities. For recurring events, stakeholders can survey the patrons in the venue or distribute suggestion cards when patrons enter or exit the venue.

One example of implementing successful event patron incentives involves the San Jose, CA “America Festival”. The website for this event alerted spectators that they need to plan ahead for the event’s hallmark 4th of July fireworks display since the park venue reached capacity early the year be-

fore. The website suggested that event patrons arrive early and see one of the many bands that performed at the festival in addition to sampling the food and drinks available. In this manner, the arrival patterns to the event become spread out over a longer time period. Instead of all spectators showing up at one time, the arrival patterns are influenced by the music that the event patron would like to listen to. In addition, the availability of food and drinks at the festival also helps to spread out the arrival patterns. These incentives reduce congestion by reducing the peak arrival rate of event patrons. Collectively, the incentives convert a discrete event (fireworks display) into a continuous event (festival).

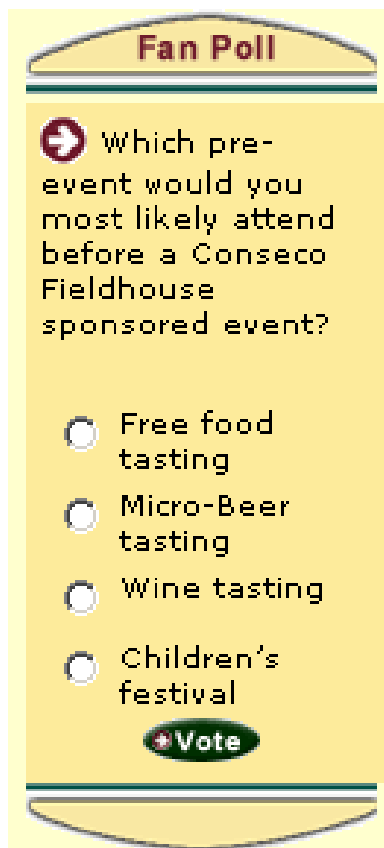


Figure 7-4
Venue Website Survey on Event Patron Incentives (Graphic Courtesy of Conseco Fieldhouse.)

In addition to the recommendations for arriving event patrons, the website also suggested that spectators remain after the fireworks for another concert. Figure 7-5 displays the slogan posted on the event website. In this manner, stakeholders assumed that some event patrons would leave immediately after the fireworks display and some would stay to listen to the music. This reduces the peak departure demand on the transportation system. The post-fireworks concert entertained spectators as they waited for traffic congestion to dissipate. In turn, event patrons did not feel that they were just “sitting around and waiting” for congestion to dissipate.

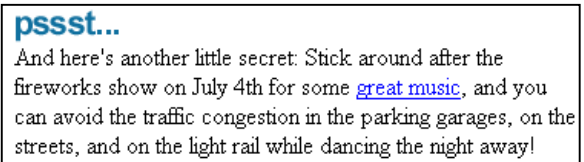


Figure 7-5
Event Patron Incentive (Graphic courtesy of EHC & FILCO.)

Bicyclist Accommodation

Another alternate form of transportation that can be used to access the event is a bicycle, especially in downtown areas. Special accommodations need to be provided for event patrons that wish to arrive by bicycle. Safety is a concern for all bicyclists, and proper bicycle paths need to be provided. These paths can consist of existing bike lanes and trails that are augmented with temporary paths leading to the event site. The provision of bicycle paths maximizes safety for the bicyclists and keeps them off roadways that experience higher traffic volumes due to the event.

Security represents a major concern of bicyclists. Figure 7-6 shows a bicycle parking area for a planned special event. In order to encourage bicycle travel, bicycle parking areas may be staffed (e.g., valet service) to

prevent bicycle theft. In addition, if the bicycle parking area is located close to the entrance of the venue, it may encourage event patrons to use their bicycles in order to access the event easier. Public transit operators may also provide accommodations for bicycles during events, such as bicycle racks on the front of transit buses that allow spectators to access mass transit while carrying a bicycle.



Figure 7-6
Bicycle Parking Area

Local Travel Demand Management

TDM strategies that reduce the amount of background, non-attendee traffic consist of:

- Increasing the use of transit (e.g. transit promotion).
- Encouraging use of carpools.
- Shifting of work hours.
- Shifting of commercial truck travel routes and delivery/travel times.

For non-attendee road users, a successful TDM plan encourages alternate travel choices, such as avoiding travel during times of event ingress/egress or travel near the event venue, that ultimately increase mobility and travel time reliability for these users compared to their default travel choice. This includes personal and business travel in addition to commercial truck travel.

Businesses can help minimize traffic demand during peak commuting hours through implementing TDM strategies such as:

- Telecommuting
- Flexible hours
- Modified delivery schedules

Carpooling should also be encouraged by major employers and through public information campaigns. In order to assist the business community in the implementation of TDM, information detailing recommended strategies and how to implement them should be distributed.

The event planning team should inform the local community as to the magnitude of the planned special event through a series of press releases and public service announcements. Alternate routes to and around the event can also be published in daily newspapers, discussed on local television or radio news, and communicated by public and private traveler information services.

In the special case of events that occur infrequently, businesses located in the immediate vicinity of a venue (e.g., hosting a Monday Night Football game) may allow employees to leave early on event dates. This initiative causes an increase in parking supply for event patrons. A public information campaign can be used to notify businesses of the possible problems that could occur and how these problems can be alleviated by clearing, for example, a downtown area prior to a certain time.

Successful local travel demand management techniques, instituted by local businesses, were utilized during the 2002 Winter Olympics in Salt Lake City, Utah.⁽²⁾ These strategies effected a change in residents' travel patterns during the event. A post-event telephone survey indicated that about one-fifth of residents changed their travel patterns

during the games. The predominant change involved employers revising normal work schedules during the event and allowing earlier work hours or flexible schedules.

In order to reduce commercial truck traffic, stakeholders should contact pertinent trucking companies and advise them of times that truckers should avoid traversing freeway and arterial corridors serving the event venue. Trucking companies should attempt to reduce the number of truck trips made and shift some of their remaining truck trips to nighttime hours. Special mailings can be sent to long haul trucking companies in order to inform them of an upcoming planned special event and affected road corridors. In addition, fliers can be distributed to truck drivers at major points of entry to the region, disseminating information on the days and times of the event, high impact locations, and special traffic patterns. During the event, e-mails containing traffic advisories can be sent to trucking companies so that they can, in turn, get the word out to truckers via citizens-band radio and through their electronic distribution lists. Portable changeable message signs (CMS) and highway advisory radio (HAR) can also be placed at major ports of entry to alert truck drivers.⁽²⁾

Some components of a successful freight management plan include requiring trucks to have permits to enter certain areas between a set time frame. In this way only trucks that need to be in the area will be present during peak traffic times. In addition, delivery hours can be restricted to overnight to completely avoid conflict with event traffic. Long-haul trucking can be discouraged from certain roadways in the event area by providing directions on the roadway that divert trucks around the area surrounding an event venue.

TRANSIT SERVICE

Overview

Modifications to existing transit service for a special event represent TDM strategies. The focus of the public transit agency is to increase ridership during the event by increasing the attractiveness of the service that it provides. In many locations and for many types of special events, additional ridership to and from special event sites can provide substantial additional revenue for the transit system at little additional cost. Also, transit system use may relieve traffic congestion around the venue.

Table 7-3 contains a summary of transit service strategies.

Public Transit Service Expansion

In order to maximize the use of public transit, options need to be convenient (e.g., faster travel time and satisfactory comfort level) for event patrons without impacting non-attendee transit users.

Three possible approaches to using public transit during special events includes:

- Existing service with additional vehicle hours. In general, this represents an extension of the existing service and is in addition to the regularly scheduled transit service. The extension of existing service may include: (1) expanded hours of operation or (2) increased frequency of system service on a particular route in order to serve a planned special event.
- Modifying existing service by creating a route deviation. A deviation involves adding a new transit stop near the event venue to the existing route. In addition, a deviation of the regular route may be required due to road or travel lane closures needed to stage the planned special

event. Because of these deviations, station-to-station travel times may change.

- Implementation of an express service to establish a special purpose route to and from the event. This service, including bus and commuter rail, usually requires riders to pay a fare, although event sponsors may reimburse the service cost or include the cost in the ticket price. The express service will involve an entirely new route and new schedule of service that accommodates the operational characteristics of the event served. Express bus routes may originate, for example, from regional park and ride lots or regional commercial centers with available parking. Express bus operations are discussed in more depth in the “Express Bus Service” section.

The Portland, Oregon area has a special Tri-Met SETS (Special Events Transit Service) Program that handles all requests for modifications to existing transit service due to a planned special event.⁽³⁾ Requests for all

special services are evaluated based on the following criteria as outlined in Tri-Met’s Service Standards:

- *Serving the Public Interest* - Certain community events require the movement of large groups of people during certain hours of the day. These are events that would otherwise seriously restrict traffic movements unless public transit took an expanded role. Historically, these events are annual events, although some one-time events may also be considered. The decision to provide the service is based on an evaluation of available resources and the need for the service.
- *Cost Effectiveness* - The special service requested must be evaluated based on both operations and system cost and on the availability of operators and equipment.

Table 7-3
Transit Service Strategies

STRATEGY	TECHNIQUES
Public transit service expansion	<ul style="list-style-type: none"> • Maximize use of public transit. <ul style="list-style-type: none"> ○ Existing service with additional vehicle hours ○ Modifying existing service by creating a route deviation with a stop near the event venue ○ Implementation of an express service to establish a special purpose route to and from the event site
Express bus service	<ul style="list-style-type: none"> • Discourage event patrons from driving their vehicles to the event site due to expected site parking deficiencies and anticipated roadway congestion. <ul style="list-style-type: none"> ○ Using express bus service between a park and ride facility or remote parking lot and event venue ○ Using park and ride lots that best intercept spectator traffic as it approaches the event site.
Charter service	<ul style="list-style-type: none"> • Use a contract service to provide transportation directly to the event site from outlying areas (e.g., other neighborhoods and cities). • Consider both charter bus operations as well as charter rail service.
Transit Service marketing	<ul style="list-style-type: none"> • Establish a comprehensive transit marketing program. <ul style="list-style-type: none"> ○ Informing the public of the availability of public transit service to/from the event venue ○ Convincing the public to use the service

- *Patronage Potential* - The special service must be evaluated on its potential ridership.
- *Service That Could Be Provided By Others* - Consideration is given as to whether or not the service can be provided by others, which includes charter bus operations, taxis, carpools, vanpools, and other dial-up services. Included in these considerations are the possibility that larger buses may be needed based on cost, geographic limitations, and potential market penetration.
- *Partnership Building* - Tri-Met's goals include partnership building in the community. This helps to enhance Tri-Met's role as a community partner and as a facilitator of mobility.

In areas where service overlaps involve two or more agencies, inter-agency coordination is very critical especially on issues of fares, transfers, and scheduled service hours. One pitfall to avoid, especially for non-regular riders, is forcing riders to use several different fare instruments. In other words, transfers may not be allowed unless the rider pays a new fare. This obstacle should be eliminated through inter-agency coordination.

Express Bus Service

Stakeholders managing travel for a particular event may discourage event patrons from driving their private vehicles to the event site due to expected site parking deficiencies and anticipated roadway congestion. These spectators would likely utilize an express bus service, originating from a permanent park and ride facility or other vacant parking area (e.g., regional mall overflow parking area), if the service provides a higher level of service to event patrons compared to the drive-alone option. An express bus would furnish direct service to the event venue. In

order for an express bus service to operate successfully, the express bus stations (e.g., park and ride areas) must be strategically located to intercept spectator traffic as it approaches the event. In determining appropriate express bus station locations, the event planning team should review the results of a feasibility study market area analysis.

Six successful examples of express bus service include:

- A successful public transit and express bus campaign was utilized during the 2002 Winter Olympics in Salt Lake City, Utah.⁽²⁾ During the event, over 2.5 million passenger trips were recorded on the Salt Lake City public transit system for an average of about 150,000 per day. TRAX (Salt Lake City's light rail system) carried two-thirds of the passengers and park and ride express buses carried the remaining third.
- Another successful implementation of express bus service involves football games at Husky Stadium on the campus of the University of Washington in Seattle.⁽¹⁾ Football game attendees were encouraged to take public transportation to the stadium. All football ticket holders were able to ride King County Metro buses for free to the stadium via special service routes from park and ride lots in the region. Event parking revenues subsidized the cost of the express bus service.
- In addition to the plan implemented for University of Washington football games, a similar plan was implemented for Seattle Seahawks football games during the 2000-2001 season, when the Seahawks were forced to use Husky Stadium for home games. The Seahawks

developed a comprehensive public information and promotion campaign. The campaign, entitled “Tackle Traffic,” included a full range of television, radio, and print media promotions. Fans were advised of the free fare transit service through the campaign. The campaign also informed event patrons that the transit service provided faster travel times than driving to the game due to the priority routes and loading locations assigned to buses before and after the game.

- The Regional Transportation District of Denver, Colorado provides an express bus service for Denver Broncos football games known as BroncosRide. This service provides transportation from 30 free park and ride lots in the surrounding area. A fee of \$6 roundtrip is charged to each event patron for the bus service or spectators can also purchase a season pass. In addition, after the game, the express bus stations exist directly outside of the stadium.
- Milwaukee, Wisconsin hosts the annual, multi-day Summerfest music festival where special express bus service, provided by the Milwaukee County Transit System and other private companies, operates throughout the event. The express service utilizes existing park and ride facilities in the area. Certain buses are provided free of charge, while service on other express routes cost \$5 for a roundtrip ticket with tickets available only at the point of origin.
- The Downtown Shuttle Service also operates in the Milwaukee downtown area. A list of parking lots and structures located near the shuttle route is disseminated on the event website. These parking facilities offer a special parking rate of \$5 or less when event patrons enter

after 5 P.M. on weekdays and all weekend. The Downtown Shuttle Service provides 5 to 10 minute headways during the event and stops at designated stations along the route serving the event. The cost of this service is \$2 roundtrip.

Charter Service

Charter service represents a contract service that provides transportation directly to the event venue from outlying areas (e.g., other neighborhoods and cities). Users often can purchase tickets in advance and generally in conjunction with the event ticket. This service can include both charter bus operations as well as charter rail operations. The charter service configuration usually involves providing direct service to the event venue. However, service may also connect to an existing transit station or park and ride lot (e.g., express bus transfer).

Advantages of charter operations include:

- Provides the opportunity for residents of outlying areas to use mass transportation. This represents the main focus of charter service.
- Allows people who would not normally have access to public transportation for a particular event to use the service.
- Results in a reduction in traffic in the vicinity of an event site as well as on major corridor flow routes serving the site.
- May include free parking in the outlying area to help promote the service.
- Allows operators to offer special season passes at a discount rate to attract riders for recurring events (e.g., football games).

One key aspect of charter bus service concerns the need to provide emergency transportation for riders should the need arise. For example, charter service travel times

may exceed an hour. Patrons who use the charter service must remain in the area of the event until the completion since, typically, only one bus or train is utilized for the event. Therefore, if a patron needs to return home as a result of an emergency, a “guaranteed ride home” service needs to be provided as part of the charter service. This represents one of the factors against charter service and, therefore, the availability of an emergency ride home policy will likely attract more users.

One example of a successful charter service involves the Rochester-Genesee (NY) Regional Transportation Authority (RTS). The RTS runs a charter bus operation from the Rochester area to Buffalo Bills’ games. The first pick-up is at the RTS headquarters and occurs 4 ½ hours before the kick off. Three more stops exist, 4 hours, 3 ½ hours, and 2 hours and 45 minutes before the game. After the last stop, a direct trip is taken to the stadium facility with the bus arriving one hour before kickoff. The charter bus departs for the Rochester area 45 minutes after the completion of the game. RTS operates a similar charter bus operation for Syracuse Orangemen football and basketball games, including the first stop a full 4 hours before the event start.

Public transit agencies may provide charter service, but only under special circumstances. In cases where the Federal Transit Administration (FTA) subsidizes a particular transit agency and that agency wants to provide any charter service using FTA funded equipment or facilities, then the transit agency must first determine if any local private bus companies can and will elect to provide the desired charter service. If a private operator exists, FTA regulations prohibit transit agencies from establishing a charter service with FTA funded equipment or facilities. Public transit agencies must submit a charter service request to the FTA at least 90 days prior to the first day on

which the transit agency wants to provide charter service. Specifics of this FTA regulation are contained in 49 CFR Part 604, “Charter Service” which went in effect on May 13, 1987.

Transit Service Marketing

In order for public transit to be effective, the general public must be made aware of the benefits of using the transit system. This can be accomplished through a comprehensive transit marketing program. This program serves to: (1) inform the public of the availability of public transit service to/from a special event venue (2) convince the public to use the service. Stakeholders can develop various marketing techniques to accomplish one or both of these tasks.

San Francisco Giants Program

One successful implementation of a transit marketing program involved the San Francisco Giants baseball team in coordination with the regional Metropolitan Transportation Commission (MTC), Bay Area transit operators, and the San Francisco Department of Parking and Traffic. These stakeholders collectively developed and implemented a comprehensive transit marketing campaign prior to the opening of the new Pac Bell Park in San Francisco.

The goal of the program involved attracting patrons to transit in large numbers. The name of the campaign was “Your Ticket Home,” and it was funded by the Giants, the MTC, and a number of corporate sponsors. Each corporate sponsor’s logo was printed on materials associated with the campaign. The transit marketing program targeted first-time transit riders. Since the Bay Area has an extensive public transportation system, the main focus of the campaign was to educate the traveling public. Key elements of the transit marketing campaign included:

- *Transit Information Guide* – A pocket-sized foldout information guide was developed and widely distributed to Giants fans, including all season ticket holders.
- *Transit Information Hotline* – A toll-free number was developed to provide live transit planning assistance for patrons.
- *Transit Tickets by Mail* – Giants season ticket holders were provided the opportunity to purchase transit tickets in advance through the mail.
- *Transit Incentive Program* – Giants fans that purchased transit tickets in advance were rewarded with points toward the Giant’s fan appreciation program.
- *Transit Advertising* – An advertising campaign was developed using the “Your Ticket Home” logo and was featured on Bay Area trains and buses and in the ballpark. The use of public transportation was also heavily promoted on Giant’s radio and television broadcasts as well as on the scoreboard inside the park.
- *Transit Ambassador Program* – The Giants and the various transit agencies worked together to provide “transit ambassadors.” These ambassadors helped to answer questions and guide new riders through transfers and fare collection procedures at various stations. These ambassadors wore brightly colored uniforms that were easy to recognize.

The Giants, the MTC and the San Francisco Department of Parking and Traffic also worked together to effectively publicize available transit services through local media including newspapers, television, and radio. In addition, press releases were issued and interviews were scheduled on television and radio to further promote the transit program.

PRE-TRIP TRAVELER INFORMATION

Information Needs

Various traveler information techniques are used to disseminate information to the public, including both event patrons and non-attendee road users, so they can be better informed when planning their trip to a planned special event, or around an event. Table 7-4 lists techniques used to provide pre-trip information to the traveling public.

Table 7-4
Pre-Trip Traveler Information Dissemination Techniques

TECHNIQUE
• Internet
• Telephone information systems
• Public information campaign
• Event and venue transportation guide
• Kiosks
• Television
• Newspapers
• Changeable message signs
• Highway advisory radio

The primary function of pre-trip information involves assisting drivers with decisions regarding route planning, travel mode, and the time of day to travel. Accurate pre-trip travel information will provide benefits to all transportation system users in the form of time and cost savings.

Pertinent information that event patrons may want before beginning their trip include:

- Best driving route to the venue from specific origins (e.g., cities or freeways)
- Best public transit route
- Parking area locations and parking fees, access to disabled parking spaces, and times that the parking areas open before the event

- Recommended event ingress and egress routes, particularly if different for arrivals and departures
- Up-to-the-minute roadway information (e.g., current traffic conditions and weather conditions)
- Estimated travel time by different travel modes
- Event information such as times and schedules
- Recommended speed/safety advisories
- Scheduled roadway construction and maintenance lane closures
- On-street parking restrictions during the event
- Heavy vehicle restrictions
- Expected delays leaving the event

This information may help event patrons better gauge the utility associated with available travel choices and, in turn, assess what transportation mode and route they will be taking to the event. Pre-trip traveler information also helps event patrons budget sufficient time in accessing the event venue.

Non-transportation information that may be pertinent to an event patron’s travel plan includes security procedures. This encompasses items allowed to be brought into the parking area or the venue itself, including pets. This information is important since it may impact the amount of time it takes spectators to get into a parking area or venue. Other information includes what vendors are available on-site, since event patrons may have the option of eating before or after the special event. This will impact the time the event patron designates for venue arrival. In addition, a seating chart and gate locations may assist the spectator in selecting which parking area to use.

Non-attendee road users also desire information on event specifics, but this information is directed more to possible road/lane closures or changes in normal traffic patterns.

The main issues for the non-attendee road user becomes, “How will the event generated traffic impact my daily driving routine?” The most relevant information is up-to-the-minute traffic reports in the area of the venue, used by non-attendee road users to determine if their travel route needs adjusting. Information on travel lane closures is also important to determine if extra time needs to be budgeted or an alternate route taken.

All of this pre-trip information helps transportation system users plan their best route to and from the event or around the event. The event patrons will have the information they need to arrive on time for the event; moreover, the information will prepare them for what may lie ahead in their trip. The non-attendee road users are also made aware of what to expect as a result of a planned special event. If residents and businesses in the area surrounding a venue incur significant impacts, then it may be more difficult, in the future, to obtain special event permits in the area.

In order to improve public understanding, cooperation, and acceptance of the planned special event, stakeholders should consider the following actions:

- Develop public information programs to encourage early travel to the event and/or spectator use of alternative routes or transit.
- Develop public information programs to encourage non-attendee road users to consider transit, ridesharing, and alternative work hours.
- Develop agreements with trucking agencies to avoid peak period travel and deliveries.

Internet

Internet websites have several key points of interest when they are used to disseminate traveler information:

- Provide global information distribution since geography is not a limiting factor.
- Facilitate interactivity by allowing users to control information display. Users can find information about what they are interested in and may also find information they did not know was available.
- Can target a specific subject area and concentrate on this area with links to other related sites.
- Provide detailed information that is not easily conveyed by telephone.
- Provide flexibility since revisions and updates can be made in a fraction of the time and cost of re-printing material (e.g., brochures).
- Identify conditions affecting service, thus answering the question: “Why are there delays on this section of roadway at this time?”
- Use graphics capabilities. Users understand complicated subject matter better when presented with graphics. This concept holds true with driving directions and transit maps, for example. It is easier to digest the information via a map rather than read a table of times and destinations. In addition, the graphics can be printed and used at a later date if needed.
- Promote existence and use of telephone information systems (e.g., 511 service).

Public Agency Websites

As illustrated in Figure 7-7, a typical public agency website includes up-to-the-minute information for the traveling public both before the event and on the day-of-event. Information provided on these websites includes traffic conditions, such as road seg-

ment speeds or traffic incident locations. In addition, websites can include in-depth details regarding traffic incident characteristics by allowing the user to click on icons for a more detailed explanation. As an example, if a certain icon shows a traffic incident, the user can click on that icon and see a more detailed explanation of the traffic incident itself.

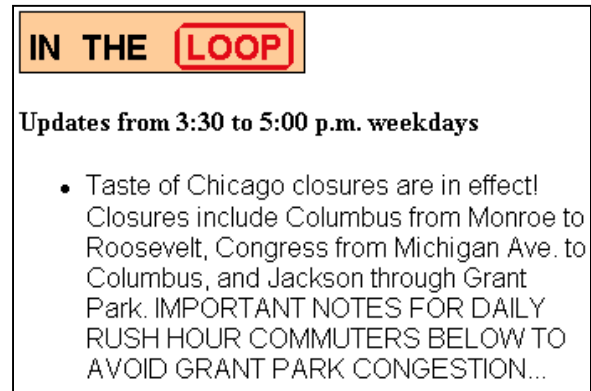


Figure 7-7
Traffic Information Dissemination Via a
Public Agency Website (*Graphic courtesy
of the Chicago DOT.*)

Public agency websites also provide information on roadway closures, locations of roadway construction sites, and details of planned special events impacting transportation system operations. Again, the user can obtain more detailed information for each location by clicking on a certain area within the website. A typical public agency website may provide weather information along with information on pavement conditions.

Public agency websites may disseminate closed-circuit television (CCTV) camera images. By clicking on CCTV location icons, a snapshot picture of the latest CCTV image is shown on the website. In addition, locations of CMS and their current message can also be shown. Public agency websites, or private traffic advisory services, may also allow users to subscribe to an alert system that allows them to receive e-mails if a traffic incident, roadway construction, or

planned special event impacts operations on a user-defined route.

One successful implementation of a website for disseminating pre-trip traveler information was the Utah DOT's CommuterLink Website (CLW) used during the 2002 Winter Olympics in Salt Lake City, Utah.⁽²⁾ The CLW represented the most highly accessed traveler information element during the Olympics. It included typical public agency information on traffic conditions including speeds and incidents. It also disseminated information on roadway closures, current roadway construction, weather conditions, and pavement conditions. In addition to the typical public agency information, the CLW provided Olympics travel information.

In order to assess the usefulness of the CLW during the Olympics, a survey was conducted of both residents and visitors to the Salt Lake City area. The results of the visitor survey showed that 41 percent of visitors heard of the CLW and 34 percent of visitors stated they used the CLW. The results of the resident survey indicated that 70 percent of residents heard of the CLW while 21 percent used it. Both visitors and residents indicated that they used the CLW to obtain:

- Traffic information
- Road conditions
- Olympics information (e.g., travel options and event operations information)
- Weather information

Event or Venue Website

A typical planned special event or venue website includes event start times and directions to the event. The website can also provide information on parking area locations, fees, alternate routes, or incentives to use different modes of transportation. A venue website represents one of the best techniques to reach the people attending the

event. Successful websites also provide information on the availability of public transportation and route maps for all public transportation alternatives. Venue ingress and egress routes can be specified on a website to provide valuable advance information to the traveling public. Appendix L contains examples of public agency and event-specific websites.

Telephone Information Systems

Another method to disseminate pre-trip traveler information to the public is by the use of telephone information systems (e.g., 511 service). This system consists of an automated voice recognition system and/or a menu that can be accessed by using a touch-tone phone, and the system provides up-to-the-minute traveler information. The system includes information on traffic conditions, public transit information, and road conditions. The system can also provide event-related information such as times, location, and event descriptions. Parking information can also be provided, such as parking locations and parking lot status information. The system can furnish updated information on event travel alternatives throughout the event. Stakeholders should coordinate with telephone information system operators (e.g., state DOT) to ensure that information pertaining to a specific planned event is included in the system and updated regularly.

Marketing a 511 service for a planned special event includes the following considerations:

- Deployment of roadside signs on travel routes to the event venue and placed in advance of the event dates.
- Promotion through the media.
- Establishment of partnerships between 511 service operators and all venue operators in a region.

- Use of television commercials and radio advertisements.
- Use of an event transportation guide for information on the service.

In addition to disseminating information via the Internet during the 2002 Winter Olympics, the Utah DOT also operated a 511 telephone information system. Figure 7-8 shows the 511 service structure established by the Utah DOT. On a typical day during the Olympics, the 511 service received 1,923 calls.⁽²⁾ Callers to the 511 service accessed the following main menu within the system:

- Traffic menu
- Transit menu
- Olympics menu
- Road conditions menu

Both residents and visitors were surveyed in regard to an evaluation of the telephone information system. The results of the survey showed that 25 percent of visitors heard of

the 511 service and 17 percent used it. The survey results reported 44 percent of residents heard of the 511 service; however, only 4 percent of residents used it.

The 511 service is normally run by a regional or statewide public agency, and the service is not intended solely for planned special events. A telephone information system is also used on a daily basis by commuters and other travelers in the area to obtain information on daily traffic conditions. However, one way that planned special event stakeholders can promote use of the existing service is to advertise it on the event website. This was done on the Bristol (TN) Motor Speedway's website. On the first page of directions to the venue, an advertisement, shown in Figure 7-9, was placed for the area's 511 service. As a result, the event website alerted event patrons of a means to obtain accurate, up-to-date traveler information before commencing their trip to the event venue or while en-route.

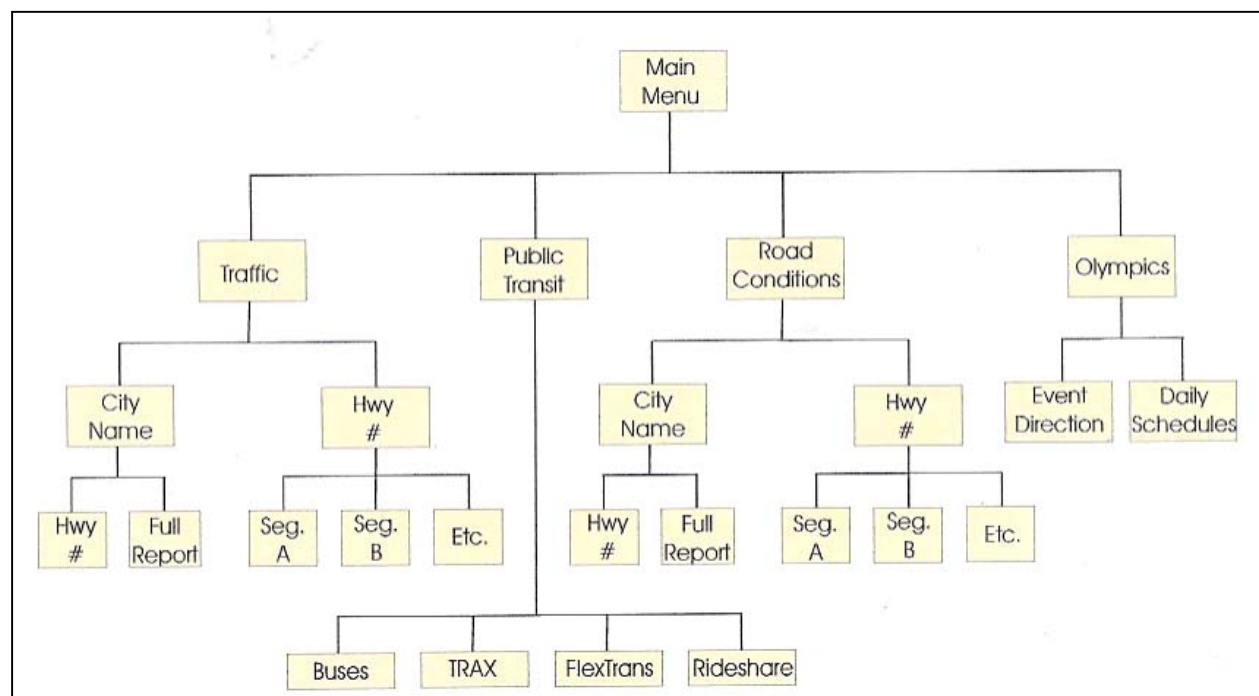


Figure 7-8
Telephone Information System Menu Structure⁽²⁾

How To Get To The Speedway (and how to get home!)

When there is NOT a major event at Bristol Motor Speedway or Bristol Dragway, the most direct route to the Speedway and Dragway from Interstate 81 north is on Hwy. 11E. Take Virginia Exit 3 and Hwy. 11E will take you directly to the Speedway. From Interstate 81 south, take Tennessee Exit 69 and turn east on Hwy. 394. Hwy 394 will take you to the Bristol Dragway Entrance. Turn on Hwy. 11E North to access the North Entrance and South Entrance to Bristol Motor Speedway.



Figure 7-9

Promotion of 511 Service on Event Website
(Graphic courtesy of Bristol Motor Speedway.)

Public Information Campaign

A public information campaign is simply an outreach initiative designed to disseminate a message(s) to a general audience and to garner public response to the message subject.

Key considerations include:

- In order for a public information campaign to be successful, stakeholders must initiate the campaign well in advance of a special event.
- Information disseminated through the campaign needs to reach both event patrons and non-attendee road users.
- Maps showing event site and location of parking areas, as well as any associated roadway closures and/or special traffic patterns, can be placed in local newspapers. In addition, this information can be broadcast on local radio and television newscasts throughout the day.
- Special media briefings can be held in advance of the event so that the media has ample time to inform the public of the upcoming activities. Stakeholders can provide the media with maps and written information.

As shown in Figure 7-10, television advertisements can broadcast telephone numbers to call for additional information about a

planned special event and related travel options.



Figure 7-10

Public Information Campaign Promotion

The Wisconsin DOT and its stakeholder partners provide several information packages for events held throughout the state. One such event was the 2002 Major League Baseball All-Star game held at Miller Park in Milwaukee. The DOT provided a detailed brochure for event patrons going to the baseball game, informing them of road construction and potential difficulties (e.g., delays) in accessing the ballpark. The brochure then specified, in detail, alternate routes that motorists could take to avoid the most congested areas. The brochure also directed event patrons to the DOT website for further information concerning any topic covered.

The Wisconsin DOT also produced a brochure entitled "Get Down Downtown" for the Milwaukee area. This brochure included maps of the area that specified all on-going roadway construction projects. It also provided information on available public transit system service and parking area locations. Suggestions, such as "carpool with friends and coworkers," were made to reduce traffic demand in the downtown area, particularly when planned special events occur. The

brochure listed summer travel tips in addition to guidance (e.g., websites) on where to get more information about any particular topic. In this manner, the brochure provided an abundance of information while not overburdening the reader. Instead of the reader having to look through an entire guide, subject areas were listed coupled with statements on how to obtain additional information. Figure 7-11 presents the summer travel tips communicated by the brochure.

Event and Venue Transportation Guide

Another strategy that can be used to distribute pre-trip traveler information is through an event-specific or venue transportation guide. These guides are normally distributed to event patrons when they receive their tickets for an event, or the guides can be downloaded from an event or venue website. Local hotels can also maintain copies of the transportation guide.

Typical items that may be included in a transportation guide that comprise useful pre-trip traveler information include:

- Schedule of events
- Driving directions
- Area map
- Inbound and outbound traffic flow routes
- Parking areas
- Area transportation options

Transportation guides can illustrate the benefits of carpooling. Parking facilities within a downtown area can be shown, and the guide can emphasize those parking facilities that offer HOV pricing. Local access streets can be identified with a request not to use those streets while driving to and from the event unless the driver intends to patronize local businesses either before or after the event.

Get Down DOWNTOWN

- Be aware of street closures before traveling downtown.** Visit www.dot.state.wi.us to view traffic cameras and travel times.
- Plan an alternate route.** Be aware of other ways to get to your destination.
- Visit ParkMilwaukee.com to find parking information before visiting downtown.** This site includes information on more than 14,000 parking spaces near 35 downtown destinations.
- Carpool with friends and co-workers.** Carpooling reduces the number of automobiles on the highways.
- Use Park & Ride lots and shuttles.** Shuttles offer an easy way to get in and out of downtown without driving and parking.
- Research transportation options.** Visit www.rideMCTS.com for a number of options which include mass transit, shuttles and frequent flyers.
- Leave early for your destination.** Planning ahead will make your trip easy.
- Use turn signals.** They let other drivers know where you are going.
- Be prepared to stop.**
- Be patient.** Your fellow drivers will do the same for you.
- Always Buckle Up for Safety.**

Logos on the right side of the brochure include: GET IPI! MILWAUKEE DOWNTOWN GET-DOWN!, CITY OF MILWAUKEE DEPT. OF PUBLIC WORKS, P (parking), SmartWays Wisconsin's Intelligent Transportation System, WISCONSIN ROUTE 940 DEPARTMENT OF TRANSPORTATION, east town, OnMilwaukee.COM, WEST TOWN DOWNTOWN-MILWAUKEE, MIDWEST MILWAUKEE AMERICAN, and MILWAUKEE POLYVALENT.

Figure 7-11
Public Information Campaign Brochure

Appendix M contains an example of a venue transportation guide prepared for Ford Field in Detroit, Michigan.

The Nazareth Speedway in Nazareth, Pennsylvania produces an informative venue guide each year that provides in-depth information about the raceway itself as well as travel options to the venue site. Appendix M contains the transportation section of the guide prepared for this venue. This guide can be downloaded from the venue's website. The opening sections of the guide provide a venue overview and list important travel tips, including the use of recommended routes and the possibility of incurring delay due to both traffic congestion and security issues. Since ingress and egress traffic patterns differ, both sets of directions are communicated in the venue guide. A facility map shows available amenities as well as parking area locations (including disabled parking). In addition, the guide includes a grandstand map and states parking area opening times in addition to parking rules and regulations.

Other Technology Applications

Other technology applications include:

- Kiosks
- Television
- Roadside traveler information devices

Kiosks

Kiosks are used extensively to provide multi-modal transportation information to the traveling public, such as:

- Area maps
- Route guidance information
- Real-time travel condition information (e.g., speeds, traffic incidents, etc.)
- Planned special event information

- Road construction and road closure information
- Public transit information
- Weather information.

Successful kiosk implementations include information that can be displayed on a color-coded map and/or printed. This information can include such items as turn-by-turn route planning. The ideal location for a kiosk is in high pedestrian traffic areas, such as hotels, tourist attractions, businesses, schools and universities, military bases, shopping malls, rest areas, hospitals, and amusement parks.

The kiosk concept is used extensively in the San Antonio, Texas area which operates 4 outdoor and 36 indoor interactive traveler information kiosks.⁽⁴⁾ Before deployment of the kiosks in San Antonio, a focus group was established that randomly selected people in the area to try the kiosk software. This allowed designers to evaluate different types of presentation layouts and information and to base designs on user feedback. The design process proved successful in creating demand for the kiosks in the San Antonio area.

Television

A successful pre-trip information strategy includes the use of local media outlets to disseminate information to the traveling public. During planned special events, television stations may show actual footage obtained from CCTV cameras along roadways in order to communicate real-time traffic information. These CCTV camera links originate from a transportation management center (TMC), and the TMC can prevent media access to certain cameras for security or privacy reasons. In addition, a successful information campaign includes the release of regular e-mail or voice recording updates to various media outlets by TMC operators. The local media outlets, especially radio and

television, use this information to alert motorists of traffic incidents, alternate routes, and general traffic information.

Television can be used to disseminate pre-trip traveler information by way of regular broadcast updates or a dedicated cable television channel. A dedicated channel allows travelers to turn on the television and view a traffic report with little delay. As shown in Figure 7-12, maps can be provided that show icons with traffic incident locations and color coded road segments that indicate current travel speeds. Television traffic reports can broadcast planned special event travel information as well as road closures, construction, detours, weather conditions, transit, and current traffic conditions.



Figure 7-12
Television Travel Report

Roadside Traveler Information Devices

Roadside traveler information devices, such as CMS and HAR, can be used in the days and weeks prior to an event to alert commuters and local residents of possible special traffic patterns and closures due to a future planned special event. Device messages can be specific in terms of the exact days and times of the anticipated travel impacts and roadway modifications. Message broadcast should commence at least one week prior to the planned special event.

HAR can disseminate more detailed information about transportation alternates and parking access for the event. The service can promote alternate modes of travel such as light rail, bus, or bicycle. In addition, information on shuttle buses for the event can be included in HAR message sets.

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CHAPTER EIGHT

IMPLEMENTATION ACTIVITIES



Figure 8-1
Personnel Monitoring of Arterial Ramp Closure

PURPOSE



This chapter describes the third phase of managing travel for planned special events. Implementation activities mark a transition phase between event operations planning and day-of-event activities. Therefore, the phase involves both the event planning team and traffic management team. This phase includes activities key to the success of any planned special event, including *implementation plan* development, stakeholder *review and testing*, and *personnel* resource management.

The underlying objectives of the chapter material are to: (1) improve the efficiency of traffic management plan deployment and (2) increase traffic management team prepared-

ness. In turn, this creates a more responsive traffic management team and fluid team operation, thus translating to better transportation system performance on the day-of-event.

INTRODUCTION



The operational success of a planned special event traffic management plan rests on traffic management team members having first-hand knowledge of pertinent plan strategies and tactics. Although most stakeholder agencies comprising the traffic management team participated in developing the traffic management plan, the actual stakeholder representatives may be different. Middle and senior level personnel partaking in event operations planning initiatives may assume a

traffic management team supervisory position, while agency field-level personnel may implement traffic management plan specifications and details. An implementation plan instructs field-level personnel, some of whom have little or no direct experience in managing travel for planned special events, on the what, when, and where aspects of their assignment in relation to traffic management plan requirements. On a management-level, an implementation plan specifies an action plan for activating, changing, and deactivating various traffic management plan provisions.

Review and testing allows the traffic management team to identify potential limitations of the traffic management plan *prior to* the day-of-event. With stakeholder agencies representing various jurisdictions and disciplines, review and testing promotes traffic management team coordination and increases stakeholder familiarity of the duties, responsibilities, and capabilities of other stakeholders. Activities range from tabletop exercises that examine how different agencies react to various scenarios to “hands-on” applications that can involve a full simulation or deploying a traffic management plan for smaller planned special events as a test.

In developing the traffic management plan, stakeholders design transportation control and management strategies to satisfactorily mitigate the impacts of event-generated travel demand. The level of response required to implement planned mitigation measures may place significant strain on agency and contractor personnel available on the day-of-event. The recruitment of temporary staff and volunteers expands traffic management team capabilities and elevates its operations efficiency. Practitioners can capitalize on the benefits of having additional personnel resources by recognizing volunteer limitations and applying proven training methods.

IMPLEMENTATION PLAN

Overview

An implementation plan details the actions required to put a traffic management plan into effect on the day-of-event. Its purpose is to: (1) define personnel assignments that indicate the roles and responsibilities of individual traffic management team personnel on the day-of-event, (2) describe a scenario-based, operations *game plan* at the management-level, and (3) communicate instructions and organize personnel at the field-level. It is intended for use by individual traffic management team personnel at the command post and in the field. While the traffic management plan indicates *how* traffic, parking, and pedestrian operations will be managed, the implementation plan describes the *what, when, and where* in terms of personnel and equipment resource deployment needed to execute traffic management plan provisions. Traffic management plan revisions made on the day-of-event mandate corresponding implementation plan modifications. Field personnel may lack familiarity with a traffic management plan developed by mid-level and senior-level agency representatives, and an implementation plan ensures a coordinated and consistent traffic management team effort and prevents field personnel from having to make independent decisions. Table 8-1 lists general field-level operations guidelines.

Table 8-1
General Field-Level Operations Guidelines

ACTION
<ul style="list-style-type: none"> • Follow assignment detail, unless revised by a supervisor (via command post). • Review traffic control at adjacent locations. • Review event permits and passes to minimize confusion and traffic flow disruption. • Maintain radio communication with pertinent supervisors and/or command post. • Expect temporary changes in operations detail.

The implementation plan communicates traffic management plan specifics using a quick reference format. The plan ranges from a memorandum to a detailed manual depending on event size and scope of plan coverage. Figure 8-2 shows two examples of implementation plans prepared for a specific planned special event. Individual stakeholders may develop a plan for the freeway/arterial corridor(s) or street networks under their jurisdiction. A large-scale implementation plan, such as an event manual, is organized by: (1) traffic management plan component (e.g., signing plan, intersection control plan, etc.), (2) zones correlating to supervisor assignments, or (3) agency jurisdiction.

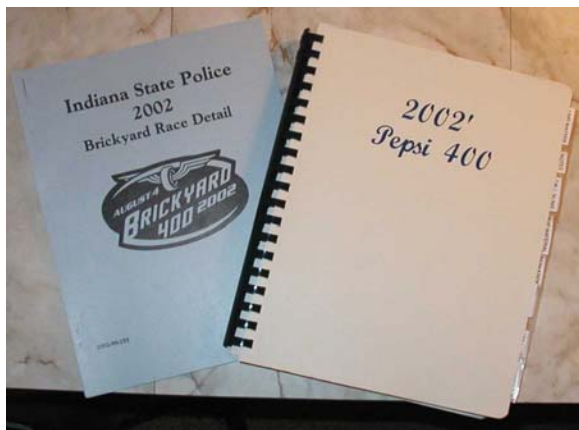


Figure 8-2

Planned Special Event Implementation Plans

Traffic management team supervisors should develop an implementation plan prior to any review and testing exercises to permit revisions and allow the participants an opportunity to become familiar with the details of their assigned job. The key to plan development, and day-of-event operations, involves assigning the right personnel, authority, and responsibility to effect optimal traffic management plan deployment. Complex tasks require skilled personnel with satisfactory experience. The implementation plan should empower traffic management team supervisors at every level: event command post, agency command post, and field loca-

tions. This allows lower-level staff to resolve certain problems without having to contact the command post, thus reducing the burden on command post personnel. While review and testing exercises may not involve all traffic management team personnel, supervisors should conduct an implementation plan review with field staff prior to the event or during day-of-event roll call.

Plan Specifications

An implementation plan describes functional activities, as specified in the traffic management plan, by location and/or resource/infrastructure type. Locations include freeway and street segments, freeway ramps, intersections, mid-block locations, and parking area access points. Specific resources and infrastructure include roadway traveler information devices, static signs, traffic control equipment, and traffic signals and associated timing plans.

The overall implementation plan organization creates numerous action plans for specific traffic management personnel or small personnel groups. Location-specific details typically specify traffic and/or pedestrian control duties and responsibilities. With regard to equipment deployment, the implementation plan contains protocol for delivery, installation, monitoring, and takedown. Stakeholders design the implementation plan to match specific personnel experienced in operating certain equipment and infrastructure.

Table 8-2 presents an implementation plan checklist. Appendix N contains example implementation plans prepared for specific planned special events. All planned actions, even if not explicitly noted in the table, must include what, when, and where instructions. For multi-day or multi-venue events, traffic control strategies and resource deployment can be organized through matrices for easy

Table 8-2
Implementation Plan Checklist

ELEMENT	ACTION
Command post operation	<ul style="list-style-type: none"> • Indicate agencies staffing the command post in addition to the name and schedule of agency representatives. • Specify equipment needs and times of delivery and set-up. <ul style="list-style-type: none"> ○ Computers, networking, temporary phone and modem lines, televisions and radios, dry erase board or flipchart(s), message board, office supplies, furniture. • Indicate procedures for accessing the command post (e.g., clearing security) • Specify vehicle parking area and helicopter landing area.
Operations timeline	<ul style="list-style-type: none"> • Indicate command post location and hours of operation. • State parking, traffic control, and service patrol shifts. • State when egress plan goes into effect. • Specify parking area and venue gate open/close times. • Summarize the location and time (close/reopen) of planned full/partial road closures. • Include event schedule, such as event start time, event end time, and significant activities during the event (e.g., parade detail and headline entertainment schedule). • State times of sunrise and sunset, if applicable to traffic control measures (e.g., use of portable lighting).
Operations management	<ul style="list-style-type: none"> • Indicate scenario-based criteria for implementing traffic management plan components (e.g., traveler information message sets, traffic flow routing, reversible lane operations, etc.) • Include a series of operations details for sequential time segments on the day-of-event. • Specify contingency plans – indicate available plans and associated equipment/personnel resource deployments and changes in traffic management team command. • Indicate procedure for revising the traffic management plan on the day-of-event. • State protocol for terminating traffic and parking management detail. • Summarize traffic management plan changes since previous event.
Contact information	<ul style="list-style-type: none"> • State contact information for individual traffic management team members. <ul style="list-style-type: none"> ○ Home phone, work phone, cell phone, pager number, fax number, e-mail address, unit/radio assignment, rank, detail assignment, vehicle assignment. • Include contact information for agencies involved in contingency plan deployment.
Communications	<ul style="list-style-type: none"> • List radio call-sign of traffic management team members. • Indicate guidelines and restrictions regarding use of various radio channels or talkgroups (e.g., field-to-field communications, field-to-command post communications, non-event communications).
Traffic management team organization	<ul style="list-style-type: none"> • State agency duties, responsibilities (e.g., traffic control, traffic signal operation, traveler information device operation, etc.), and jurisdiction. • Specify highest-ranking agency representative on the day-of-event in addition to mid-level (e.g., zone) managers. • Summarize chain of command.
Equipment and infrastructure management	<ul style="list-style-type: none"> • Mandate pre-event equipment check (e.g., CMS operation). • Specify locations and quantities of traffic control and other support (e.g., portable lighting) equipment. Indicate equipment owner and, if applicable, power source. • Indicate equipment delivery, installation, and removal schedule in addition to personnel assignments. • Indicate schedule and location (zone) assignment of available equipment maintenance crews on the day-of-event. • Include equipment operating instructions (e.g., remote HAR programming). • Indicate temporary static sign locations and descriptions. • Specify planned traveler information message sets (e.g., CMS and HAR). • Specify personnel responsible for monitoring and programming traveler information devices on the day-of-event. • Indicate protocol and personnel charged with implementing different traffic signal timing plans as-needed on the day-of-event.

ELEMENT	ACTION
	<ul style="list-style-type: none"> • Indicate protocol and personnel charged with monitoring traffic surveillance equipment (e.g., CCTV). • List available maintenance personnel and equipment resources.
Location-specific traffic and pedestrian control	<ul style="list-style-type: none"> • Indicate agency personnel (e.g., number of staff or individual name, rank, and unit/radio assignment), report date and time. • Specify schedule and route of roving service patrols. • State protocol and personnel assignments for maintaining unobstructed emergency access routes. • Specify task instructions, including traffic and pedestrian flow restrictions and permitted movements (e.g., special allowances for local traffic, buses, etc.). • Summarize the location and time (close/reopen) of planned full/partial road closures encompassing a particular location. • Provide step-by-step directions in order for substitute personnel to quickly learn protocol. • Include explanation, supplemented with graphics, of special event parking area permits and event passes.
Post-event evaluation	<ul style="list-style-type: none"> • Describe components of post-event field personnel debriefing. <ul style="list-style-type: none"> ○ Time of heavy traffic and pedestrian flow ○ Qualitative assessment of traffic and pedestrian operations at location. ○ Recommendations to improve traffic and/or pedestrian flow at location

reference. Traffic management team supervisors should maintain a full version of the event traffic management plan, including contingency response plans, at the command post.

In an effort to best prepare traffic management team personnel, particularly team supervisors, for day-of-event operations, the plan can include a qualitative evaluation summary of transportation system operations for a previous, similar planned special event. This allows team members to familiarize themselves with past operations and lessons learned. The plan may highlight new provisions and changes for the subject event aimed at mitigating past lessons learned.

REVIEW AND TESTING



Purpose

While all of the steps discussed up to this point are important, the best traffic management plans may fail if they are not reviewed and tested prior to their implementa-

tion. The event operations planning process, by its very nature, is based on assumptions and expectations. Those event planning team members who helped draw-up the plan may have a thorough knowledge of their agencies' experience and capabilities, but there are probably many traffic management team members and volunteer personnel who had little or no role in developing the plan, yet have the responsibility of implementing it and managing travel on the day-of-event.

While a traffic management plan can cover many contingencies, it cannot cover all possibilities. Review and testing can allow participants to see how they handle various scenarios and how varying elements can affect the plan. The testing of the plan should be considered part of the overall training that is needed for traffic management team personnel to become familiar with the plan and their role in it.

This section covers what should be done in the days leading up to plan deployment, including simulation exercises and equipment testing which will help assure that what is planned is what actually happens.

Stakeholder Simulation Exercises

A plan is just a plan until it is implemented. Simulation exercises allow that plan to be given life and allow stakeholders to see how it might work in the real world of the planned special event.

The simulation exercise can test important elements such as: (1) interagency communications, (2) deployment of personnel and equipment, and (3) information gathering and dissemination. While stakeholders may conduct the exercise at the venue where the planned special event will occur, much of the plan will involve permanent transportation management centers (TMC) or temporary command posts which are in operation before, during, and after the event. Therefore it is important that all of the responsible agencies and TMCs, which may have a role to play during the actual event, be involved with the simulation exercise.

Communications should be tested not just from a technical standpoint but also to make sure what is being communicated is understood. The simulation provides an opportunity to make certain this part of the plan works as expected.

Exercises can take on two different forms:

- A tabletop exercise
- A full-scale simulation

The purpose of both types of exercises is to: (1) test the written assumptions in the traffic management plan and (2) see what must be changed and how the plan can be improved. No matter how thorough a traffic management plan may be, it can not account for all contingencies. The plan assumes participants will follow the steps laid-out, but individuals make mistakes and equipment may fail. Both the tabletop and full-scale simulation allow the participants to see how they react to those unexpected events.

Without the benefit of testing the traffic management plan, discrepancies may not be realized until the actual implementation of the plan. During simulation exercises, mistakes can be discovered while there is still time to make modifications and before any negative consequences are realized.

In both a tabletop exercise and a full-scale simulation, participants receive and use the written traffic management plan and implementation plan as the basis for their actions. Table 8-3 lists elements of a typical exercise.

Table 8-3
Elements of a Stakeholder Simulation
Exercise

ELEMENT
<ul style="list-style-type: none"> • Identify the stakeholders who will participate in the exercise. • Distribute copies of the traffic management plan and implementation plan to participants. • Develop a script for the exercise, including surprise elements that may not be addressed in the traffic management plan. • Provide a timeline for the exercise to play-out (the exercise will probably take place in an accelerated timeframe compared to a real-life event). • Identify reviewers who will watch the exercise and take notes. • Provide time to review the exercise. • Modify the plan based on what was learned during the exercise.

The goal of the testing is not to be mistake-free, but to identify potential problems. Therefore, when the actual event takes place errors, may be minimized and the event can run smoothly.

For both tabletop and full-scale simulations to be effective, they should test as many parts of the traffic management plan as possible using scenarios that are as realistic as possible. Since participants can not be expected to remember all that takes place during the exercise, it is critical that observ-

ers be used to: (1) watch what happens, (2) take notes on what is seen and heard, and (3) recount observations during the review process. Participant input is also crucial in the review process. They can note difficulties experienced during the exercise that might not be obvious to observers. Reviewers should debrief participants as soon as possible after the exercise so participants do not forget what they experienced. These participant observations should also be included in a more extensive review of the exercise.

Individuals who do not represent day-of-event traffic management team personnel or event stakeholders can be very useful in moderating the review process since they do not bring real or perceived bias into the process.

Finally, all of the observations and insights are useless unless there exists some opportunity to incorporate recommended changes into the traffic management plan.

Tabletop Exercise

At its most basic level, a tabletop exercise can simulate what actions will be taken using only a limited number of people. The tabletop exercise may be held within the confines of a room, but there is still an opportunity for representatives of all participating stakeholders to take part. The tabletop exercise can be run by a handful of people who regularly manage travel for other planned special events occurring in their region and, therefore, know how stakeholders deal with other events. The participants take on roles such as the TMC operator or field personnel and state what actions they would take based on a scenario as it is presented and as it evolves.

One shortcoming of the tabletop is that not all of the participants, especially the front-line personnel, will take part in the exercise.

This could mean that those who are playing the role of a traffic management team member might handle events differently than those who actually would take the actions on the day-of-event, or that actions might differ if there were interaction with other participants. It also means that the insights, questions and suggestions of these operational personnel are lost. One way this can be addressed, in part, is to have several tabletop exercises, which review portions of the plan with smaller groups. Having multiple tabletop exercises better accommodates the schedule of designated traffic management team personnel. These exercises can focus on that portion of the plan, which in turn, involves these individuals.

A tabletop may also miss outside influences that would be dealt with during an actual planned special event. For example, a TMC operator may be handling other activities during a special event such as an incident not associated with the event.

It should be noted that a tabletop exercise could be held prior to a more detailed exercise, which involves a greater number of people. In fact, a tabletop may identify problems which can be corrected prior to a more detailed exercise and allow a better simulation of what takes place.

Full-Scale Simulation

A full-scale simulation involves a larger number of people and takes place at various locations. During the exercise, actual communication takes place between participants including those at the planned special event site, TMCs, and in the field.

While the simulation tests elements of the traffic management plan, there is also benefit to throwing in a few *curveballs* to see how participants handle the unexpected. While a TMC, for example, may bring in additional staff to handle the added work-

load of the planned special event, there is a possibility of a major unexpected incident taking place at the same time as the event. In this instance, it may be impossible to follow all elements of the traffic management plan, and participants can be tested on how they identify priorities and decide what portions of the plan to follow or discard.

While a simulation will bring weaknesses to light, it is important that all those affected become aware of those weaknesses and work together on how to modify the plan, prior to the day-of-event, to minimize the weak spots.

An important part of the simulation is the *review* that follows. All those who participated in the simulation now have an opportunity to: (1) go over the simulation step-by-step, (2) compare it to the traffic management plan which was developed, and (3) modify the plan as appropriate. There are several reasons why it is important that all participants have an opportunity to critique the simulation. First, a problem may only be observed by one individual, yet that problem could affect the entire operation. Secondly, if the plan is modified, it needs to be discussed by all those who are affected. In the same way it is important for all pertinent stakeholders to have a role in developing the traffic management plan, it is important also for everyone to be aware of necessary plan changes and to note how those changes may impact their agency's operation on the day-of-event.

Equipment Testing

A wide variety of equipment may be used to manage travel during a planned special event. This includes communications equipment and equipment in the field, which supports the traffic management plan and helps the traffic management team manage the event. Equipment that may need to be tested includes:

- Center to center communications
- Center to field communications
- Changeable message signs (CMS), both fixed and portable
- Highway advisory radio (HAR)
- Closed-circuit television

While testing is no guarantee that equipment will work as expected, it is useful in identifying unknown problems and potential problems before the event. For example, if an event is taking place in a remote area, communication to field devices may be hindered by weak or nonexistent signals.

Stakeholders should consider testing for these types of problems as far in advance of the event as possible so that alternatives can be identified and developed. Other types of testing, such as the functioning of field equipment, should take place just prior to the event to make sure it will be working during the event.

During a planned special event, communications will often be routed from the command post at the planned special event site through the TMC, if present, to field personnel and others responsible for implementing various elements. Since the venue is at a location where transportation management activities may not normally take place, it is especially important that communication linkages between the venue and the TMCs work well. If radio communications are required, these should be tested on all frequencies expected to be used. If wired communications are installed, then they should also be tested. Back-up communication channels should also be tested in the event primary channels develop problems. For instance, cellular phone systems might be overloaded during an event that draws a large number of people, especially if a problem occurs during the event, which causes many event patrons to use their mobile phones.

Communication from the TMC to various field staff must also be tested. Again, some of these field personnel may be in locations not normally used during day-to-day activities, and this testing will verify communication can take place from the TMC to all field positions.

There are other pieces of equipment that are also important and these should be tested. For example, motorist information tools such as CMS and HAR may be used to transmit important information both to (1) those attending the event and (2) those who are traveling through the area and who stakeholders want to steer clear of the event. In many instances, portable CMS may be deployed. Communications from the TMC to the signs must be tested to make certain there are no problems updating the signs. Again, keep in mind that portable signs may use the same cellular phone frequencies that event patrons use and, as a result, communications that work during a simulation may not be as reliable during the actual event.

As with other elements of the traffic management plan, contingencies should be developed. If wireless communications are unavailable, what alternates are available? Can field personnel be deployed to manually adjust equipment? Do these individuals possess sufficient qualifications needed to operate the equipment? There are a host of questions that should be considered and tested.

PERSONNEL

Overview

Traffic management plan implementation on the day-of-event involves personnel duties ranging from trivial tasks to responsibilities critical to the safety and mobility of transportation system users. A traffic management team comprised of supervisors and

field staff having experience in assigned duties and responsibilities represents a key to successfully managing travel for planned special events. Experienced personnel should exist at all levels in the traffic management team hierarchy: interagency command, agency command, and field operations. However, supplementing experienced personnel with temporary staff and volunteers on the day-of-event also provides advantages that (1) reduce personnel cost as public agency personnel likely require overtime wages on the day-of-event, (2) permit public agencies to adequately meet other daily staffing requirements, and (3) provide expanded control over transportation operations and greater convenience to event patrons.

In some cases, the amount of personnel required to implement traffic management plan strategies (e.g., traffic/pedestrian control, parking, surveillance) on the day-of-event, coupled with implementation plan assignments such as equipment delivery and installation, may exceed the staffing capabilities of agencies and contractors involved in managing travel for a planned special event. As a result, the recruitment and training of temporary staff and volunteers becomes paramount to the success of day-of-event operations. The effectiveness and ultimate success of a traffic management plan depends on the level of personnel (and equipment) resources available to implement the plan. A determination to use and train volunteers, or additional volunteers, may occur as late as after the completion of stakeholder simulation exercises and after stakeholders make final revisions to the traffic management plan and implementation plan.

Table 8-4 lists common personnel resource requirements on the day-of-event. The table indicates volunteers are better suited for non-essential activities, primarily because of experience and reliability concerns. Yet,

these activities contribute toward improved traffic and pedestrian flow within the venue site area. For instance, the deployment of field observers allows for data and information to be collected, processed, and transmitted in real-time to traffic management supervisors. Volunteers can facilitate improved operations at mode transfer points, such as shuttle bus stations and pick-up/drop-off areas. Public agency stakeholders do not have the resources or budget to assign paid staff for every activity supporting traffic management plan implementation. These stakeholders, coupled with private contractor support, can instead work to supervise teams of volunteers charged with traffic and pedestrian management support tasks.

This section focuses on tasks associated with the use of volunteer personnel in managing travel for planned special events. As emphasized in this and previous chapters, stakeholders have the responsibility of as-

signing staff experienced in handling challenging tasks that comprise a particular traffic, pedestrian, or parking management strategy. While some experienced personnel may not have worked a planned special event in the past, they have performed the same or similar task(s) on regular basis as a result of day-to-day responsibilities or response to other events (e.g., traffic incidents and roadway construction activities). For instance, the actions involved in programming a CMS or HAR during a planned special event does not change from its use in other situations. The stakeholder simulation exercises described in the previous section represent training for experienced personnel on managing travel for a particular planned special event. In contrast to experienced personnel, many volunteers have no past experience in managing travel for planned special events, nor do they have experience in tasks associated with traffic and pedestrian control and parking operations.

Table 8-4
Day-of-Event Personnel Resource Requirements

ACTIVITY	EXAMPLE TASKS	RECOMMENDED PERSONNEL
Event transportation services	<ul style="list-style-type: none"> Operate shuttle bus. 	Experienced personnel
Active traffic and pedestrian control	<ul style="list-style-type: none"> Manage competing traffic and pedestrian flow. 	Experienced personnel
Passive traffic control	<ul style="list-style-type: none"> Monitor barricades and other traffic control devices. Guide traffic or pedestrian flow (e.g., pull-through). 	Volunteers
Parking operations	<ul style="list-style-type: none"> Guide vehicles through parking area access point. Process vehicles at parking area gate. Park vehicles. 	Experienced personnel and volunteers
Operations monitoring	<ul style="list-style-type: none"> Monitor parking area occupancy levels. Observe traffic and pedestrian operations. Collect performance evaluation data. 	Experienced personnel and volunteers
Crowd control	<ul style="list-style-type: none"> Prevent overcrowding and vehicular/pedestrian conflicts. 	Experienced personnel
Event patron assistance	<ul style="list-style-type: none"> Disseminate directions at mode transfer points. Provide support at shuttle bus stations. 	Volunteers

Volunteer Recruitment

Prior to initiating volunteer recruiting efforts, event planning team and/or traffic management team stakeholders must determine the number of volunteers needed. This represents a function of the number of potential volunteer work assignments and number of available volunteer supervisors. An alternative approach to recruiting after traffic management plan development involves: (1) soliciting the public, through event advertisements, for volunteers early in the event operations planning phase and (2) developing a volunteer contact list for later reference as conditions warrant. The list may also indicate the type of work task(s) favored by each volunteer. Event organizers or traffic management team supervisors should obtain written confirmation from stakeholders that personnel resources pledged during the event operations planning phase will be available on the day-of-event.

A key consideration in supervising volunteers, or any personnel, involves maintaining good span of control. Incident Command System guidelines suggest keeping the span of control between three and seven persons reporting to a supervisor with one supervisor per five subordinates as a rule of thumb.⁽¹⁾ A supervisor should represent an agency or contractor involved in planning and managing a particular planned special event. The supervisor should also have full knowledge of the duties and responsibilities of each subordinate, and supervisors may train the particular volunteer group that they have been assigned to lead on the day-of-event.

Volunteer recruiting and associated training activities result in volunteers knowing their respective work assignment prior to the day-of-event. Because different special event work assignments peak varying levels of

interest among volunteers, stakeholders should recruit additional volunteers for certain low-interest assignments. For example, most volunteers do not like parking assignments; therefore, overkill in volunteers stationed at parking areas represents a good tactic.⁽²⁾ This avoids a potential shortfall relative to volunteers not showing up for work on the day-of-event.

Various perks can improve and speed-up the volunteer recruiting process. Stakeholders should consider providing volunteers with (1) free public transportation to and from the event venue site and (2) free food and beverages while on shift. Table 8-5 summarizes other rewards for volunteer service.

Table 8-5
Example Rewards for Volunteer Service

REWARD
<ul style="list-style-type: none"> • Free admission to the special event • Tickets to a future venue event • Permission to keep work uniform • Recognition gift or dinner • Drawings for substantial prizes

Training Activities

Training for volunteers and temporary staff ensure these personnel: (1) understand the traffic management plan component governing their assignment, (2) disseminate accurate information to event patrons and supervisors, and (3) understand traffic management team operations protocol. Training involves the distribution of reference material, pre-event seminars, or both. Reference material should detail specific duties and list volunteer report time, roll call location, shift duration, and supervisor assignment. A day-of-event checklist would assist volunteers in identifying and remembering items (e.g., proper clothing, sunscreen, sunglasses, reference guide, etc.) to bring for their shift. Volunteers also would benefit from carrying an event transportation and parking guide or

fact sheet for quick reference when assisting event patrons. Such reference guides contain information on key traffic management plan provisions, particularly those that contrast normal transportation system operations in the vicinity of the event venue.

Table 8-6 lists general volunteer training activities. Since most volunteers do not possess relevant experience in managing transportation and parking operations, training activities should address all of the potential decision-making scenarios that volunteers may encounter in addition to day-of-event communications.

Table 8-6
General Volunteer Training Activities

ACTION
<ul style="list-style-type: none"> • Discuss traffic management team chain of command. • Summarize job training and required duties. • Schedule review. • Present examples of typical and contingency scenarios and how volunteers should react. • Provide background in customer service. • Describe field communications infrastructure. • Discuss proper radio communications protocol. • Explain types of parking area permits and event passes. • Discuss strategies for accommodating persons with disabilities (e.g., review disabled accessible routes and site facilities). • Review security guidelines. • Review guidelines for interacting with the media. • Indicate transportation information and alternatives for volunteer access to event venue site.

The traffic management team may supply some volunteer staff with a handheld, two-way radio for volunteer-to-volunteer and volunteer-to-supervisor communication. Compared to cell phone use, two-way radios allow all pertinent personnel, including those at the command post, to hear one message. Volunteers should receive written and

verbal instruction, including sample conversations, on radio protocol that includes: (1) how to make and receive a call, (2) common radio terminology, (3) making priority or emergency calls, and (4) conditions warranting a priority call. Volunteers also should know how to use all radio functions.

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CHAPTER NINE

DAY-OF-EVENT ACTIVITIES



Figure 9-1
Traffic Management Team Day-of-Event Interaction

PURPOSE

The purpose of this chapter is to discuss the actual implementation and operation of the traffic management plan during the day-of-event. This constitutes the fourth phase of managing travel for planned special events. The chapter covers several areas, including sections on the *traffic management team*, *communications*, and *traffic monitoring*. This information allows the transportation management center (TMC) staff and traffic management team members to gain an understanding of how the Incident Command System (ICS) can be used for managing travel during planned special events and provide guidance on setting up a communi-

cations framework for planned special events transportation management.

INTRODUCTION

During the advance planning process, countless meetings were attended, numerous hours were spent developing and reworking the traffic management plan, and every contingency was considered. Now, the day is here and it is time to implement and operate the plan.

This chapter looks at what happens on the day(s) of the event. Not only do the requirements of the traffic management plan have to be considered, but also it is essential

to monitor what can be a very fluid situation to see how the plan is working and then determine what needs to be adjusted based on real-time traffic conditions.

Always expect the unexpected and be ready to handle that unplanned situation. Assess the adequacy of the established communications structure and determine if it is possible to deploy what is needed in a timely manner.

While there is no way to be certain until it happens, this chapter provides tools that will help practitioners deal with and manage all that might happen on the day-of-event.

Table 9-1 lists the key day-of-event activities.

Table 9-1
Day-of-Event Activities

ACTION
<ul style="list-style-type: none"> • Implement a management process for the traffic management team. • Designate a multi-agency command post. • Conduct a traffic management plan evaluation(s) during the day-of-event. • Establish protocol for traffic management team officials to consider and implement changes to the traffic management plan to accommodate real-time traffic conditions. • Establish interagency communication protocol. • Review communication equipment compatibility. • Use the media to communicate with event patrons and other transportation users. • Perform traffic monitoring on the day-of-event.

TRAFFIC MANAGEMENT TEAM



Stakeholder Roles and Coordination

The traffic management team includes not only many of those stakeholders that have

been involved during the event operations planning phase, but all those who may be involved for the first time on the day of the event. This includes other event support stakeholders, other stakeholder representatives, and volunteer personnel. Table 9-2 lists typical stakeholders involved in day-of-event activities.

Table 9-2
Traffic Management Team Stakeholders

STAKEHOLDER
<ul style="list-style-type: none"> • Traffic operations agency • Transit agency • Law enforcement • Public safety • Event organizer • Transportation consultants • Traffic control contractors • Emergency management agency

A planned special event represents a source of non-recurring congestion where, similar to a traffic incident, stakeholders must adopt a formal management process to ensure successful traffic management plan deployment and minimal impact to transportation system users. The Incident Command System can be used to handle traffic management during planned special events. The ICS organizes and coordinates multi-agency response to an incident by establishing responsibilities and lines of authority. An Incident Commander has overall responsibility for managing the planned special event. Depending upon the size of the event a number of individuals will report to the Incident Commander. A key to the ICS is that the reporting relationships be kept to a manageable size. If the number of people reporting to a single individual grows too large, another layer of command should be added.

Unified Command represents an ICS management process that functions to coordinate inter-jurisdictional and multi-disciplinary

stakeholders comprising the traffic management team without sacrificing agency authority, responsibility, or accountability. Figure 9-2 displays an example of a Unified Command organization for managing travel for planned special events. The Unified Command hierarchy includes the Incident Commander serving to coordinate and manage the activities performed by stakeholders classified under the following organizational elements: branches, groups, and units. A branch agency manages a specific operational function. For example, a law enforcement agency is responsible for traffic control and pedestrian accommodation. Group agencies manage and execute specific functional activities. Units execute specific functional activities. For instance, a private towing company is responsible for removing illegally parked or disabled vehicles.

Per Unified Command protocol, if an unexpected event happens during the planned

special event, a transfer of command may occur. The decision to effect a transfer of command depends on the qualifications and experience of all on-site branch agency supervisors relative to that of the acting Incident Commander. For example, if a severe weather event took place during a planned special event, an emergency management agency official may assume the role of Incident Commander.

An advantage of using the ICS during a planned special event is that it clarifies how decisions are made if the traffic management plan requires adjustment. Unexpected events may necessitate adjusting the plan to meet changing circumstances. In this instance, there may not be the luxury of meeting with all stakeholders to develop a consensus on how to modify the plan. The Incident Commander should have the authority to make those adjustments that are needed.

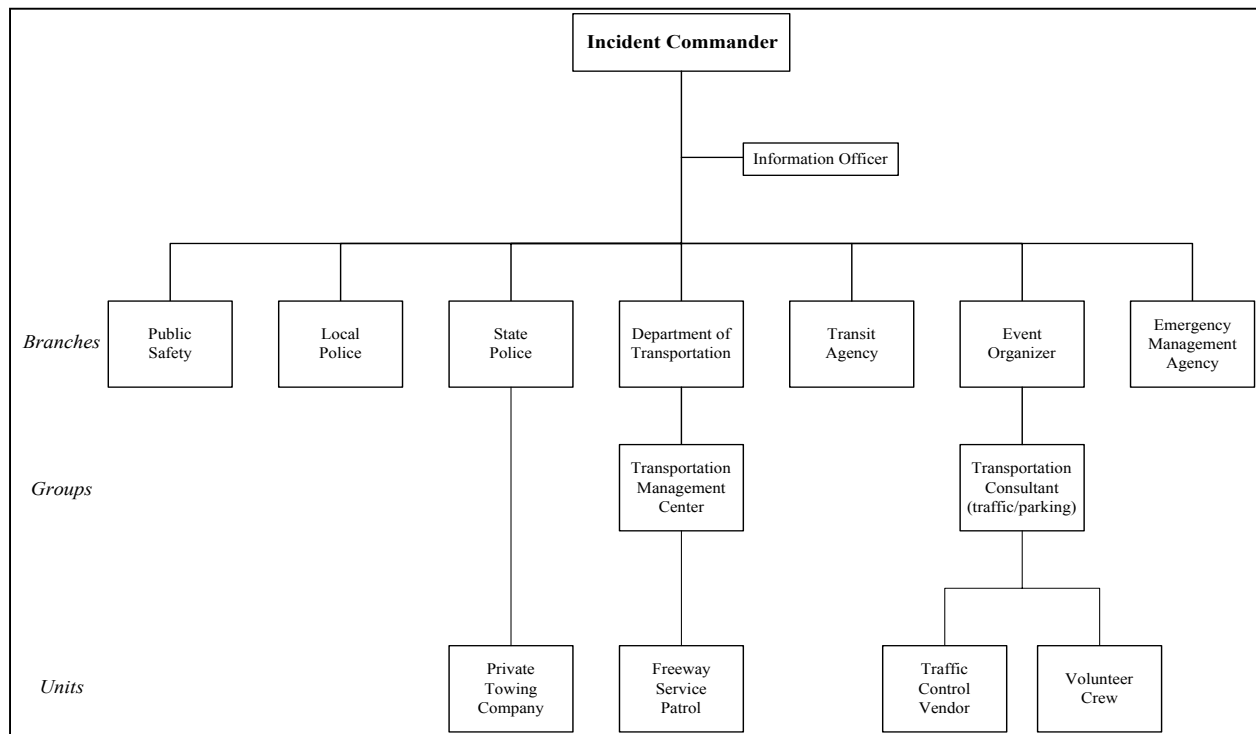


Figure 9-2
 Unified Command Organization for Planned Special Events

Team Management

Typically for a planned special event, a representative of a law enforcement agency will take on the role of Incident Commander. Representatives of various agencies will, in turn, report to the Incident Commander. Among those working under the Incident Commander will be one or more transportation representatives. A lead person should be identified for each agency responsible for part of the traffic management plan. Among those who may be a part of the transportation team are representatives from the state department of transportation, local traffic agencies, toll agencies and transit agencies. Depending upon what is worked out in the event operations planning phase, all of these individuals may be represented by a single Incident Commander (e.g., transportation commander) or by individuals representing each of their respective agencies.

Command Post

The ICS will most likely be used in a multi-agency command post. Figure 9-3 shows a command post established at a freeway rest area for a major rural planned special event

in Wisconsin. This will probably be at or near the venue where the planned special event takes place. Again, depending upon the size of the event, secondary command posts may exist. These secondary command posts may take on specific areas of responsibility, such as law enforcement or traffic control. Regardless of where the command post is located, or if it is located in multiple locations, the same principles of incident command will apply. An Incident Commander will still have overall responsibility for managing the event. What may differ, if there are secondary command posts, is how communications are handled to and from the Incident Commander.

In some instances, a permanent TMC may serve as the primary command post. The advantage of using the TMC is that many of the communications resources and other needed tools are already in place. If the TMC is used, the ICS should still be employed if multiple agencies comprise the traffic management team. This operation would likely differ from typical activities in the TMC, given the presence of multiple outside agency representatives. In the event



Figure 9-3
Planned Special Event Command Post (Photo courtesy of the Wisconsin DOT.)

operations planning phase, the ICS would be used to identify who is the Incident Commander at the TMC and how activities are coordinated within the TMC during the event.

Advantages of a single command post include: (1) key agencies are represented in a single location and (2) communications among agencies are simplified.

An advantage of secondary command posts is that event management can be more easily switched if a problem develops at the primary command post.

Resource Planning

The plan developed for the resources needed for the event represent the collected best opinion on what is needed. Resource planning involves the following two parts: (1) determining the scope and amount of resources that will be used on the day-of-event and (2) identifying resources in advance in case the traffic management team needs more resources than planned to implement the traffic management plan.

The most important resource that stakeholders must plan for involve personnel resources. Planning considerations include:

- What type and quantity of skilled personnel are needed?
- Where should personnel be deployed?
- What responsibilities will individual personnel have?

Most day-of-event field personnel will work in areas different from their normal, day-to-day work location. Relief for personnel may be more difficult to obtain because of agency constraints, and relief assignment should be part of personnel planning. Field

personnel may require frequent breaks in difficult weather conditions, and traffic management team officials may have to substitute back-up staff if planned relief is not available.

The operation of planned special events on the day-of-event includes three phases: ingress, the event itself, and egress. Resources need to be available for all three phases with emphasis on ingress and egress. The traffic management team will likely need fewer personnel for traffic management during the event, and part of the planning should include what level of staffing is needed during this period. Depending on the length of the event, a second shift may report to handle egress. If a first (ingress) and second (egress) shift exists, traffic management team officials can stagger work times (e.g., first shift individual reporting later and leaving later or second shift individual reporting early and leaving early) to maintain sufficient personnel on-site during the event. Another consideration concerns how quickly staff and other resources can be deployed in case the event ends sooner than expected, thus causing early departures.

Managing Traffic

While the traffic management plan and supporting implementation plan notes how stakeholders expect to manage traffic, the actual management of traffic on the day-of-event may differ from what the plan calls for. Traffic incidents, changing weather conditions, and other unexpected events can all cause the traffic management plan to be modestly modified or completely changed. After safety, successfully managing traffic represents the reason why stakeholders developed the traffic management plan in the first place and that goal must remain paramount.

For this reason, it is important that involved stakeholders understand that the traffic management plan provides guidance but is not an ironclad law that must be followed regardless of what takes place on the day-of-event.

As part of the traffic management plan, various scenarios can be addressed from best case to worst case, together with likely variations. Having different scenarios and response plans specified in the traffic management plan will help managers more quickly respond to changes. Again, not every variation can be noted, but experienced staff can modify what the traffic management plan calls for.

When done well, managing traffic is done on a proactive basis, anticipating what will happen next and reacting before problems cascade. Like an orchestra conductor, the traffic managers are calling on different elements to play as the event proceeds. A traffic queue in one area will require adjustments to signal timing on primary and alternate routes. Traffic incidents not only require response to the site of the incident but the activation of appropriate messages on roadside traveler information devices.

As a general rule, drivers tend to be more understanding about a congestion delay if they are informed of what is taking place and are assured steps are being taken to mitigate the problem.

To properly manage traffic, the managers need timely and accurate information. Staff in the field must understand the importance of the information they provide, and staff at the command center must help the managers understand the information coming in, such as pointing out what is most important. Too much information without some interpreta-

tion is almost as worthless as too little information.

Other staff should be on hand to assist with other activities taking place in the command center. This includes handling VIPs, disseminating information to the media, and addressing routine items such as equipment problems.

Evaluation Activities

Although many hours have been spent creating the traffic management plan, the plan should remain flexible with the ability to modify and enhance it with necessary changes based on real-time traffic conditions. Updates can continue through the course of the planned special event, accounting for new situations and unexpected events. Evaluation of the plan is an ongoing activity during the event, and participants should contribute their insights as they witness the event unfolding. The traffic management team must be open to modifications of what had been agreed to during the event operations planning and implementation activities phases.

Table 9-3 indicates key traffic management plan evaluation activities on the day-of-event.

There are several different ways to accomplish this evaluation and revision process:

- Some modifications will be minor in nature and will not require significant discussion. For example, moving a traffic post may be a simple change that improves the flow of traffic. The Incident Commander may have authority to make such a change.

Table 9-3
Traffic Management Plan
Evaluation Activities

ACTION
<ul style="list-style-type: none"> • Establish briefing schedule and location (e.g., command post). • Identify ranking representative of each stakeholder agency participating in briefings. • Conduct day-of-event briefing. <ul style="list-style-type: none"> ○ Situation status ○ Objectives and priorities ○ Current organization ○ Personnel and equipment resource assignments ○ Communications ○ Concerns and related issues ○ Recommended changes • Achieve consensus on recommended changes.

- A more significant change, such as the route of buses to the venue site, involves a greater number of agencies and individuals. These changes need to be discussed before being implemented to make certain everyone affected is aware of the change so that any concerns with the proposed change are addressed and overcome.
- If the suggested change is urgent, a quick discussion among the agencies involved may suffice.
- If it is not urgent, the modification can be discussed during a regularly scheduled meeting of the stakeholder representatives.

How and if these meetings are scheduled can vary depending upon the dynamics of the planned special event:

- If the event is small in scale and only a few agencies are involved, there may be no need for scheduled meetings. Revisions can be easily discussed among participants at the command post.
- On the other hand, large events involving many stakeholders would require

meetings to discuss: (1) what has taken place, (2) what lies ahead, and (3) what changes are recommended.

If scheduled meetings are planned, the next question is when to hold these meetings:

- If the event stretches over several days with a clear end time each day, it is logical to conduct a meeting at the end of each day's activities. At this point, the participants will not be distracted by managing the event, and they will have the benefit of their experience that day to decide what should be revised.
- If the event is longer, perhaps even running around-the-clock, regular meetings can be scheduled during expected lulls in activity. These meetings may be specifically scheduled in anticipation of key activities, such as the egress of event patrons.
- For events where a shift change is needed in the command center, a meeting of the crew, or crew supervisor, going off-duty may be helpful so they can recommend changes to those relieving them.

Many of the same procedures used during the creation of the plan can be used to make revisions during the event. Those involved discuss the changes, call for input from those directly affected, and agree on what will be done. It is important that any changes be communicated to all involved. Major problems can develop if one group is operating under old assumptions. In many cases, having a computer and printer available will make updates easier to share. If the plan is in a notebook or manual form, the revised section can just take the place of the old section. Participants should note on the revised plan that it represents an update and when that revision was made. This makes it

easier to track changes and make certain everyone is operating with the same information.

COMMUNICATION

Structure and Protocol

In most areas of the country, interoperable communications, in which all agencies are able to communicate on a common radio frequency, is not yet a reality. That being the case, it is necessary for a communication structure and protocol to be established. As shown in Table 9-4, the structure should include the noted primary considerations.

Table 9-4
Communications Structure
Primary Considerations

CONSIDERATION
<ul style="list-style-type: none"> • What radio channels or frequencies will be used. • Who will use these channels. • Will a common lexicon be used for communications.

Whatever frequency is used, it is important that all those who must use it be able to access the channel and that coverage include all areas where operations will take place.

In some cases, operating on a common frequency may require the distribution of radios to some of the stakeholders. In some instances, agencies have used cellular phones with a push-to-talk feature to provide a common channel during an event. Some agencies may already have these handsets and use them for day-to-day operations. One or more special talk channels can be established for use during the planned special event to allow only traffic management team members to be on the air. Table 9-5 lists the advantages of using this type of system.

Table 9-5
Advantages of Operating on a
Common Frequency

ADVANTAGE
<ul style="list-style-type: none"> • Most of the infrastructure is provided by a private company. • Coverage can be achieved over a wider area than some individual agencies enjoy. • Agencies' normal channels are freed for regular operations. • Other frequencies are not jammed with transmissions related to the planned special event.

Another important part of the protocol involves using *common language* on a multi-agency frequency. Many agencies use verbal shorthand in the form of codes when transmitting. These codes work well when used by those who know them, but when other stakeholders are involved, the codes can be a source of confusion and miscommunication. An increasing number of agencies are now using clear language protocols on their radio frequencies, and these standards should be followed if multiple agencies have to communicate with one another. Clear language simply says that commonly understood words and phrases are used instead of codes. For instance, instead of calling an accident a Signal 11, the crash should be called an accident on the radio.

Interagency Communication

Since multiple stakeholders are involved, it is critical that they be able to communicate with one another on the day-of-event:

- The most basic, and least desirable, form of interagency communication involves messages being relayed indirectly from one agency to another. An example could include a police officer in the field wishing to coordinate a road closure with the DOT. The officer radios the in-

formation to a dispatcher who, in turn, calls the dispatcher at the DOT. The DOT dispatcher then radios the crew in the field. Coordination might take several messages being sent back and forth through this chain. This form of communication delays the sharing of information and is subject to miscommunication.

- As noted in the previous section, operating on a *common channel* with *clear language* greatly improves interagency communication. Depending upon the size of the planned special event, more than one channel may be used. For example, one channel could be deemed as the primary channel, which is used by all participants for the sharing of critical information. Another channel may be dedicated to transportation concerns.

To minimize confusion and extraneous information being shared among agencies, the question of who will use which frequencies should be decided during the planning process. Stakeholders should understand: (1) how they can reach other traffic management team members during the event, (2) which channels they will be found on, and (3) what information should be shared.

Since many of the stakeholders comprising the traffic management team may not be accustomed to interagency coordination, they should understand the importance of sharing information with their interagency partners. Information not shared with others who are affected could lead to difficulties managing traffic and cause mistrust among participating stakeholders.

Equipment

The participating agencies may normally operate on a wide variety of systems. VHF,

UHF, and 800 MHz trunked systems are among those in common use, and agencies cannot normally communicate from one system to another. Before the right equipment can be identified, it is important for the stakeholders to understand what they want the communications system to do. Is it simply a means to share information, or does real-time coordination have to take place? Who has to operate on the channel? Where will they be located? Once these questions are answered, it becomes possible to identify the appropriate equipment to use for the event.

Table 9-6 lists several levels of communication that must also be studied. First, there is communication within the venue. In this relatively small area, a radio system that provides coverage just in the area of the venue may be sufficient. Hand-held units may be given to personnel who have to coordinate at the site. Communications may take place between individuals or between field staff and the command post.

Table 9-6
Levels of Communication

COMMUNICATION LEVEL
<ul style="list-style-type: none"> • Within the venue • Between individual stakeholders • Between field staff and command post • Between command post and TMCs

Another level of communication would be between the command post and the TMCs. Here it may be more difficult to identify the best equipment to use. The TMCs may be geographically distant from each other and the command post. Because the centers are inside buildings, and often on lower floors, radios without an external antenna may not be able to reach all the participating stakeholders. In order to depend upon these communication channels, it is important that they be tested before the event. If no radio

communication is practical, a hardwire connection may be needed. In some TMCs and command centers, phone jacks are installed to allow dedicated phones to be deployed for events.

A trunked radio system provides what is needed for interagency communication during a planned special event. Other agencies, which also operate on a trunked system, may be able to modify their units to operate on a common frequency. A trunked system also allows a dedicated channel to be set aside for the event. Those agencies without the proper equipment can be loaned radios, which allow them to operate on the common channel.

Interacting with the Media

The media is an important part of the planned special event. If the event involves a lot of people, it also is a news story and the media will want to cover it like any other story. The media can also be an important part of traffic management plan implementation. Table 9-7 indicates how the media can be used to communicate with event patrons and other transportation system users.

Table 9-7
Use of Media

BEFORE EVENT
<ul style="list-style-type: none"> • Identify preferred routes. • Identify approved parking areas. • Identify transit alternatives. • Identify locations where event patrons can obtain travel information on the day-of-event.
DURING EVENT
<ul style="list-style-type: none"> • Warn people ahead of time about the routes they should take. • Advise of available options. • Alert drivers about problems, delays, and blockages. • Suggest actions travelers should take.

Communication with the media should start before the event. If there is pre-event advice that stakeholders wish to disseminate, then the media can be a conduit to the public.

During the event, the media can be used to provide real-time updates about transportation system delays and blockages. Again, advice on how to avoid the delays can be provided.

Most agencies already have some forms of communication in place with the media. However, these may not be the best way to communicate during the planned special event. For example, many agencies work with traffic reporting services during periods of recurring congestion. The planned special event may be taking place on a weekend or holiday when the traffic reporting service is not in service. Alternate means to get real-time information to broadcasters may be needed.

The media may also find that the usual means they use to get traffic information are unavailable during the planned special event. Due to security concerns, airspace near the site may be off limits. This makes the media more dependent upon the agencies to provide them with updates.

Unless a proactive decision is made otherwise, most agencies would not want the media to call the command post for updates. Calls to and from the TMC may be the best way to get information to the media. Wherever the media are directed to call, it is important that the person handling those calls has the most up-to-date, accurate information available. For the media to trust this source, they must believe that this is the best place to get information. Since most media want to verify information on their own, agencies should be prepared for the media to

seek out other sources. The media may also acquire information via cell phones from event patrons driving to the planned special event, and the media will want to verify the information the public provides with the transportation agencies. If trust is lost between the media and the agencies, the agencies may lose control of the flow of information.

Traveler Information Dissemination

Traveler information will have two important audiences during the event: (1) those who plan to attend and (2) those who want to avoid the delays the event may cause. In both cases, traveler information tools can be used to effectively disseminate information.

Table 9-8 presents various pre-trip and en-route traveler information dissemination methods.

Table 9-8
Traveler Information
Dissemination Methods

METHOD
<ul style="list-style-type: none"> • Newspapers and printed material • Radio and television • Internet (e.g., websites and e-mail) • Changeable message signs • Highway advisory radio • Telephone information systems (e.g., 511)

The dissemination of traveler information begins before the event with warnings of what may occur, preferred routes to the site and around it, and where drivers can get updates on the day-of-event. Different tools lend themselves to particular uses. Newspapers and other printed material, for example, lend themselves to graphic information such as maps. The Internet represents a powerful medium for disseminating pre-trip travel information to event patrons and other

transportation system users. Figure 9-4 shows a Seattle Department of Transportation web page detailing specific planned special event traffic impacts and multi-modal travel options.

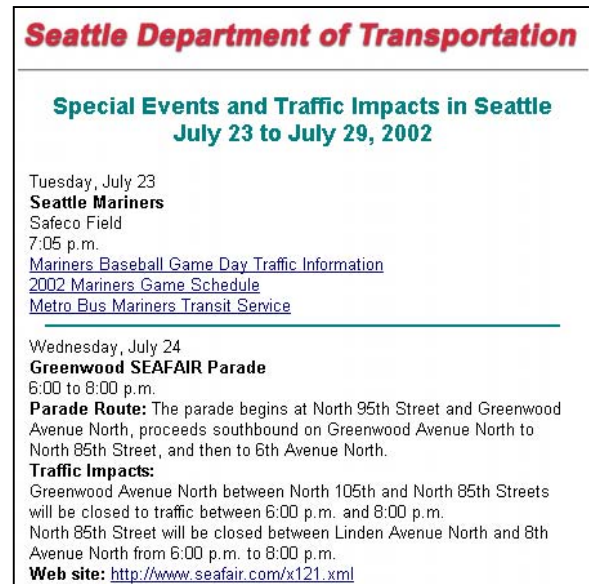


Figure 9-4
Internet Traveler Information (*Graphic courtesy of the Seattle DOT.*)

Changeable message signs function best to raise awareness of a potential problem while road users are en-route, and highway advisory radio is somewhere in the middle, being able to provide more detail than signs, but less than printed material. The planned special event is likely to require the deployment of portable changeable message signs because a greater concentration of information is needed and because the event may be taking place in a location where permanent devices are not in place. Portable highway advisory radio stations may also be considered to reach motorists.

In planning for the event, stakeholders must consider: (1) which devices will be used, (2) approved messages that can be displayed,

and (3) how to disseminate the information to event patrons and other transportation system users.

The growth of 511 services represents another important avenue to disseminate information. As 511 becomes more well known and more widespread, travelers are more likely to think about dialing 511 before they go or while they are en-route to get the latest information. Even where 511 is not yet in use, other recorded telephone services can be used.

No one system will reach all of the people that stakeholders wish to alert. In fact, even if all systems are used, operators will not reach every transportation system user. But, by using a variety of tools, the traffic management team will be able to reach a critical mass of people so that delays will be minimized and the customer requirements of all users satisfied.

On the day-of-event, it must be clear who will update traveler information devices and how timely and accurate information will get to the officials responsible for providing the updates. These individuals must be part of the communication chain. Again, assigning a dedicated person to handle the updates would be ideal. Conflicting priorities could result in out-of-date information being disseminated if one person is asked to handle too many tasks.

TRAFFIC MONITORING



Traffic monitoring represents an important day-of-event activity, serving to provide traffic and incident management support in addition to performance evaluation data. Timely deployment of contingency plans developed during the event operations plan-

ning phase depends on the accurate collection and communication of real-time traffic data between traffic management team members. This section describes how traffic monitoring activities support real-time traffic management and control decisions during the day-of-event.

Purpose

Agencies responsible for managing planned special events require numerous types of information on the current conditions of the system to support delivery of effective service for the planned special event. This required information varies widely depending on: (1) the service being provided, (2) how often it needs to be collected, and (3) how accurate it needs to be (e.g., for traffic control and traveler information purposes, simply knowing whether pavement is wet/icy or not may suffice; for purposes of managing snow and ice control activities, more detailed information is required).

Information is crucial for successful operations of the transportation network. As noted in an FHWA TEA-21 reauthorization proposal: “Operating the highway system to achieve security, safety, and reliability objectives requires an ability to know what is happening on the system. Real-time information on highway system performance and weather conditions / events is vital to assist highway professionals in managing the available capacity, responding to disruptions to capacity (including emergencies, evacuations, and security threats), and to system users in planning the timing, mode, and route for their trips.” In essence, the many benefits of the various planned special event management strategies cannot be fully realized unless practitioners are aware of the real time conditions on the highway network.

Traffic Management Support

In a traffic management system, the traffic monitoring component, or surveillance component, is the process in which data is collected in the field. This data is used to supply information about conditions in the field to other system components including personnel located in the field on the day-of-event. Surveillance provides the information needed to perform the functions identified in Table 9-9.

Table 9-9
Use of Surveillance Information

FUNCTION
<ul style="list-style-type: none"> • Measure traffic and environmental conditions in real-time. • Make control decisions. • Disseminate traveler information. • Monitor and evaluate system and plan performance.

Surveillance is not limited to collecting and monitoring traffic condition information alone, nor in some instances are they automated in nature. Surveillance is applied to weather and pavement conditions to provide operators and maintenance staff more information to support their traffic and transit management responsibilities. These systems also are being used to manage snow removal, icy roadway treatment, to detect limited sight distance problems caused by fog or smoke, and to detect high water levels along roadways. While much traffic surveillance (detection) is accomplished via automated means, manual detection, most notably via in-field personnel on cell phones or two-way radios and cell-phone calls from motorists, is a viable and reliable strategy for planned special event management. In many instances of planned special event management, the surveillance must be microscopic rather than macroscopic, i.e., a

particular point or location must be monitored rather than an area or region, and this strategy of manual detection is the most cost-effective and efficient.

Various technologies that exist for collecting this information are described in Table 9-10.

Table 9-10
Data Collection Methods

METHOD
<ul style="list-style-type: none"> • In-roadway and over-roadway sensors for measuring traffic flow parameters • Vehicle probes for collecting data on travel times and origin-destination information • Closed circuit television (CCTV) systems for viewing real time video images of the roadway • Road weather information systems (RWIS) for gathering information on pavement and weather conditions • Traffic signal and system detectors to measure congestion on streets • Parking management systems to monitor available capacity in parking garages or lots • Manual methods

Detection and surveillance, whether highly technical and automated or simple and manual, is the cornerstone of traffic monitoring. Traffic management strategies and Intelligent Transportation Systems (ITS) technologies can assist in reducing congestion, improving safety, and enhancing mobility. However, without the capability to know the current operating conditions, coupled with the cooperation and coordination among personnel in the responsible agencies, the potential benefits of these strategies and technology systems may not be realized. To that end, it is not a simple matter to quantify benefits from detection and surveillance alone, but instead to understand the benefits realized from traffic management strategies and ITS technologies that rely on detection and surveillance. Some benefits of particular importance are noted in Table 9-11.

Table 9-11
Benefits of Detection and Surveillance

BENEFIT
<ul style="list-style-type: none"> • Reduction in delay and congestion related to early detection and verification of incidents. • Reduction in secondary accidents as a result of early incident detection. • Reduction in capital (e.g., salt) and recurring (e.g., plow crews) costs associated with snow and ice removal with the use of Remote Weather Information Sensor technology. • Improved traveler information.

The information collected through the monitoring effort is valuable for post-event activities. After the event, the information gathered and/or observed can be used as part of the program or event evaluation. The data collected provides: (1) input into estimating the benefits of the traffic management plan and operation and (2) input into planning for future planned special events. An example of some statistics or measures that can be obtained from traffic monitoring on the day-of-event, and can commonly be used to evaluate the effectiveness of the event traffic management plan and operation includes:

- Reduction in delay
- Change in mode
- Increase in transit ridership
- Reduction of travel time
- Increase in travel speed
- Reduction in loaded cycle lengths at signalized intersections

In summary, most of the benefits realized during planned special events results in some way from the real-time information provided by traffic monitoring.

Performance Evaluation Data

Performance measures provide the basis for identifying the location and severity of problems (such as congestion and delay), and for evaluating the effectiveness of the implemented planned special event management strategies. Table 9-12 indicates uses of this monitoring information. In essence, performance measures are used to measure how the transportation system, and therefore the traffic management plan, performs with respect to the adopted goals and objectives, both for ongoing management and operations of the special event and the evaluation of future options.

Table 9-12
Traffic Monitoring Information Uses

USE
<ul style="list-style-type: none"> • Track changes in system performance during the event. • Identify locations or corridors with poor performance. • Identify potential causes and associated remedies (i.e., contingency plans). • Identify specific areas that require improvement/enhancements for future events. • Provide information to decision-makers and the public. • Provide input to post-event evaluation.

Most measures for planned special event management are congestion-based and are measures that can be quickly and efficiently assessed. Table 9-13 indicates key performance evaluation measures. Certainly other non-transportation measures are important to successful planned special event management; however, these are neither accurate nor timely enough to allow for day-of-event management.

Table 9-13
Performance Evaluation Measures

MEASURE
<ul style="list-style-type: none"> • Parking occupancy and turnover rate • Arrival and departure service rate at parking area access points • Time to clear parking lots • Vehicle delay at intersections • Queue length • Travel time and delay on freeways and streets • Traffic volume to capacity ratio • Traffic speed • Number and location of crashes and other incidents • Traffic incident clearance time

Table 9-14 lists some of the reasons that agencies have instituted performance measures and the associated monitoring and evaluation processes.

Table 9-14
Reasons for Traffic Monitoring and Evaluation

REASON
<ul style="list-style-type: none"> • Provide better information about the transportation system to the public and decision makers (in part due, no doubt, to a greater expectation for accountability of all government agencies). • Improve management access to relevant performance data. • Improve agency efficiency and effectiveness, particularly where demands on the transportation agency have increased while available resources have become more limited.

In managing travel for planned special events, a direct relationship exists between the performance measures selected and the data needed in the performance measurement process. The data and information used in decision-making must be of high quality because the remedies have to be performed immediately. They must originate from reliable, consistent sources and meet the needs of the decision makers. Moreover,

the decision makers must have confidence in the information, or it will not be used.

The most common data problems are acquiring the required information in the exact form desired, and in ascertaining the quality of the data. The “garbage in, garbage out” concept applies to the data used in a performance measurement system. If the data gathered are highly uncertain, then the conclusions drawn by converting those data into performance measures also will be highly uncertain and will have reduced value to interested stakeholders. For this reason, great care needs to be taken in data collection. In reality, however, some things either cannot be measured accurately or cannot be measured accurately at an acceptable cost and in an acceptable timeframe. Transportation agencies need to consider the uncertainty introduced by inaccurate data when taking action based on their system of performance measures, especially in planned special event management, where the modifications have immediate, and possibly disastrous, results.

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CHAPTER TEN

POST-EVENT ACTIVITIES



Figure 10-1
Field Observation of Traffic Management Plan Implementation

PURPOSE



This chapter covers the fifth and final phase, post-event activities, of managing travel for planned special events. It identifies pertinent activities that should be included in the evaluation of local and regional traffic operations for planned special events. This chapter presents an *evaluation framework* that describes advance planning considerations and the importance of evaluation in managing travel for planned special events, particularly the integration of data and findings into future planning activities for all planned special events in a region. This chapter also examines the three primary products of the post-event activities phase:

participant evaluation, post-event debriefing, and post-event report.

INTRODUCTION



The last event patron has left the venue site, the command post is closed, and traffic has once again returned to normal. The traffic management team is finally finished with this planned special event...well, not really. Now comes the final phase of managing travel for planned special events, where participating stakeholders and volunteers can look back on what took place and evaluate what happened. While post-event evaluation may mark the final stakeholder activity for this special event, it should be consid-

ered as the first step in planning for the next planned special event. The program planning phase utilizes lessons learned and evaluation results from one planned special event to develop products, such as policies and regulations and permanent infrastructure deployment, for improving travel management for all planned special events occurring in a region.

No matter how thorough the traffic management plan, chances are excellent not everything happened as expected. Maybe it was an oversight or an unexpected glitch. Perhaps some elements worked better than expected, and it turns out that all the resources allocated were not needed. Whatever the case, the evaluation phase is where the plan should be compared with what actually happened and appropriate decisions be made as to what to do differently the next time. Even if the same planned special event was handled dozens of times previously, there are adjustments that can be made based on the most recent experience.

EVALUATION FRAMEWORK



Overview

The first steps in the evaluation of the traffic management plan implemented for the planned special event take place during the event operations planning phase. Knowing ahead of time that a post-event evaluation will occur allows participants to make provisions for the review. In particular, this means collecting data during the event, which can be used as part of the review process. At a minimum, this would include data indicating how the system performed and a log of what took place during the event. For example, Figure 10-2 shows technicians installing an electronic vehicle

counter on an exit lane serving a parking area at a fair. Figure 10-3 shows a traffic management team member maintaining a log of freeway service patrol motorist assists during the day-of-event. Data collection activities also include surveying of event patrons and the public to get their perspective on how well elements of the traffic management plan worked.



Figure 10-2
Electronic Vehicle Counter Installation⁽¹⁾



Figure 10-3
Maintenance of Freeway Service Patrol Assist Log

Table 10-1 summarizes key post-event activities.

Table 10-1
Key Post-Event Activities

ACTION
<ul style="list-style-type: none"> • Review measures of effectiveness identified in event operations planning phase. • Compile agency measures of effectiveness. • Compile performance evaluation data. • Conduct stakeholder participant debriefing. • Conduct event patron survey. • Conduct public survey. • Conduct a post-event debriefing meeting. • Prepare a post-event report.

Table 10-2
Internal Measures of Effectiveness

MEASURE
<ul style="list-style-type: none"> • Number of messages displayed on changeable message signs • Number of messages broadcast on highway advisory radio • Number of traffic incidents handled • Number of messages transmitted between stakeholders • Number of traffic signal timing changes • Number of times a ramp(s) was closed and time/duration of closure(s)

Measures of Effectiveness

Measures of effectiveness (MOEs) represent quantitative measures that give some insight into how effectively a unit is performing. MOEs are measures of activity that, while not reflecting performance directly, show workload and trends. To evaluate how well the traffic management plan worked, some form of measurement is necessary. In addition to telling stakeholders how effective their plan was, the measurements provide transportation professionals the means to demonstrate to others, including the media and elected officials, how well the plan may have worked.

There are two areas of effectiveness that should be measured, *internal* and *external*:

- Internal measures are actions taken by the traffic management team that may not be apparent to the public. For example, while the public would note a traffic incident being cleared, they would not be aware of the total number of traffic incidents handled.
- Examples of internal data, which can be measured, are indicated in Table 10-2.
- Internal measures are beneficial to stakeholders in helping them evaluate traffic management team activity.

- External measures are readily identifiable by the public during a planned special event. The volume of traffic on primary and alternate routes represent two examples.
- External measures are clearly experienced by most spectators attending a special event and are factors most likely to be noted by the public.
- External measures are likely to be viewed as more important by those outside the traffic management team, such as transportation system users and community interest stakeholders.
- Table 10-3 presents a list of external measures.

Table 10-3
External Measures of Effectiveness

MEASURE
<ul style="list-style-type: none"> • Volume of traffic on major routes • Volume of traffic on alternate routes • Volume of traffic entering and exiting the site and parking areas • Hours of delay • Number of event patrons and participants utilizing transit to and from the event • Travel times • Modal split • Average vehicle occupancy

- Stakeholders may measure hours of delay by predefining what is considered congestion and noting how long the congestion lasts.
- While external measures provide hard statistics to demonstrate the plan's effectiveness, softer measures may also be beneficial. A survey of attendees may show how effective they perceived the traffic management plan. Their level of satisfaction with ease of access, quality of traveler information, and other activities can provide insights into how the users of the system view the effectiveness of the plan that was implemented.

Before deciding what to measure, it is important to decide how to evaluate the traffic management plan and the performance of the traffic management team. This decision may be driven, in part, by difficulties experienced during previous planned special events, political considerations, or a need to demonstrate the value of particular tools used during the event.

Integration with Program Planning Process

The evaluation must be more than an afterthought to gain the maximum benefit from it. As part of the program planning process, the evaluation should be considered from the initiation of the process through its conclusion. If the evaluation is being done for the first time, those who are putting the plan together have to look at the goals and then design the evaluation to measure whether the goals have been met.

If previous evaluations have been done, even if they were done for another event, the results of those evaluations should be examined before the traffic management plan is designed. In the case of an unrelated event, there may be some lessons learned that

could be applied to this new event. If this is a recurring event, previous evaluations would have more specific insights that can be applied.

Since evaluation will be taking place throughout the planning process and during the event itself, it is important that the evaluation steps, goals and objectives be established during the program planning phase or early in the event operations planning phase for a specific planned special event.

Finally, as the event concludes, it is also important that a mechanism be created to take what is learned in the evaluation of a specific planned special event and put it in a form that allows the evaluation results to be applied to future events.

Application to Future Events

Whether the event is a one-time only happening or an annual occurrence, what has been learned through the evaluation can contribute toward proactively improving travel management for all planned special events occurring in a region.

To be beneficial for future planned special events, the results of the evaluation should be documented and made accessible. In the case of a one-time only event, the evaluation may show both general and specific insights, which can be used for other future planned special events. These could include areas such as traveler information, interagency communications, and the planning process itself.

For recurring events, a file providing the cumulative benefit of lessons learned will help sharpen the traffic management plan developed for each new occurrence. It is also important to remember that with recur-

ring events, slight changes in circumstances will require modifications to the plan.

PARTICIPANT EVALUATION



Stakeholder Debriefing

At the conclusion of the planned special event, a debriefing session should be held. The stakeholder debriefing is an opportunity to bring together those involved and impacted by the planned special event. In it, these individuals, and the groups they represent, can compare what the plan called for and what actually took place. They can also examine areas the plan may not have addressed but turned out to be issues in hindsight. All of those who were involved in creating the traffic management plan, as well as key people who played a role during the event itself, should be present for this session. This includes stakeholders forming the event planning team and traffic management team. Table 10-4 lists elements of a stakeholder debriefing.

Table 10-4
Elements of a Stakeholder Debriefing

ELEMENT
<ul style="list-style-type: none"> • Introductions of individuals and the roles they played (if not obvious) • Explanation that the debriefing is not designed to find blame for anything which may have gone wrong, but to identify areas of improvement for future planned special events • Distribution of a chronology of the special event, preferably one which melds individual agencies' own chronologies • Review of the timeline of events • Discussion of other areas of concern • Next steps to incorporate lessons learned

Stakeholders include anyone who had a role or was affected by the planned special event. This certainly includes the transportation and public safety professionals who devel-

oped the plan and were involved in its execution. However, other stakeholders also have a strong interest, even if they had no part in creating the plan. For example, businesses that may have been affected by the special event, due to closed roadways limiting access, are stakeholders with a strong financial stake in the event.

The debriefing process should involve those directly involved in traffic and parking management during the event. This includes traffic management team members stationed at the command post, at the transportation management centers (TMC), and in the field. While they may not be present at the debriefing session, the viewpoints of other stakeholders should also be considered during the debriefing process. Figure 10-4 highlights Indiana State Police debriefing protocol for officers in-charge (OIC) of traffic control during the Brickyard 400 auto race.

The debriefing should not be viewed as a “finger-pointing” or “blame” session. If it is perceived that way, stakeholders will tend not to be frank about any of their own shortcomings and will more likely focus on defending themselves. To ensure involvement of all relevant stakeholders and to encourage their candid comments, it should be made clear that the debriefing session is not a time to blame anyone for something which may have gone wrong during the event.

A log or chronology of what took place during the event should be used to guide the discussion. Ideally, this log will incorporate the activities of all stakeholders so the events can be seen in the light of other actions that took place on the day-of-event. This log may be kept by a representative at the command post or at the TMC. If a master log is not kept, individual agencies can share their own chronologies before the

The identified O.I.C. (or first name on detail list) will be in charge of the detail and responsible for entire operation of detail. This person will be responsible for forwarding to the appropriate Zone Commander, not later than five (5) days following the detail, a Supplemental Incident Report covering each day of Qualifications and Race Day, containing the following information.

- (1) Location by number and zone.
- (2) List each unit assigned to the location by name, P.E., time spent on detail and travel time.
- (3) Heavy traffic flow times at location.
- (4) Comment on how location operated.
- (5) Any persons arrested by personnel on your detail and charges.
- (6) Any recommendations you feel will improve the operation of this location. Use diagram if needed.

Figure 10-4
Indiana State Police Debriefing Protocol for Brickyard 400⁽²⁾

meeting and these can then be merged into a single document. During the event, end-of-day review meeting notes should be examined to focus on actual situations and modifications that were incorporated into the plan.

The evaluation will compare the plan with what actually took place. Actions, whether considered good or bad, that deviated from the plan should be noted. It is not enough to simply note what was different than expected, but *why* it differed from the plan. Stakeholders should also be candid about what they would do differently based on their experience during the event.

If the planned special event is a recurring one, lessons learned should be documented so that when a traffic management plan is developed for the next event occurrence, the plan addresses past lessons learned. Even if the event represents a one-time activity, the lessons learned should still be documented. Many of the lessons may have application for the next planned special event and can be used in developing traffic management plans

for similar planned special events or future events occurring at the same venue.

Patron Survey

Although the goal is to keep traffic moving on all of the transportation facilities, the patrons are the ultimate customers of everyone involved in the traffic management of the planned special event. It is largely for their benefit the traffic management plan was created in the first place, and they are the ones likely to suffer the greatest consequences if the plan does not work. Therefore, the viewpoint of event patrons is needed if a credible evaluation of the plan is to be done.

It is impossible to question everyone who attended the event, but a survey of attendees will give insight into the patrons' opinions. Unless measuring statistics for use in future event travel forecasting, it is not necessary that a scientific survey be done either. What is important is that a cross-section of patrons be surveyed in order to identify common threads. For example, if a significant number of patrons say traveler information was

inaccurate, it will become clear that aspect of the plan needs to be reexamined.

As shown in Table 10-5, the patron survey can take several forms. Appendix D contains an Internet-based event patron evaluation survey for those attending the 2003 Fair Saint Louis festival. The patron survey probably will not be able to identify problems in great detail, but combined with record keeping by the participating stakeholders, the survey should be able to focus on where problems occurred.

Table 10-5
Types of Event Patron Surveys

TYPE
<ul style="list-style-type: none"> • Comment cards event patrons can fill-out • Surveyors who question attendees • Solicited and unsolicited e-mailed comments

The survey should be brief in order to encourage a response. Yes or no type questions are easily answered. Sample questions for possible inclusion in a patron survey include:

- Were you aware of any special travel information before the event?
- Did you find information provided en-route to the event (e.g., via signs, radio) helpful?
- Did you experience any unexpected problems approaching the venue?
- Do you have any suggestions or other comments you wish to offer?

Public Survey

The public survey takes in a wider audience than the patrons. This includes those who may have been impacted by the planned special event even though they did not attend the event. Since this is a larger and more diverse group of stakeholders, it may

be more difficult to identify and survey them.

Methods for reaching the public include surveys in rest areas along alternate routes and approach routes to the event, solicitations via websites, and comments provided by phone and mail. Surveys may be mailed to homeowners and businesses in the area affected by the special event to solicit their opinions. Sample questions for possible inclusion in public survey include:

- Were you aware of the event before it took place?
- If you were aware of the event beforehand, would you have altered your plans based on that information?
- Did you change your plans or schedule as a result of the event?
- How would you evaluate the effectiveness of traffic management efforts for this event (poor, good, excellent)?
- Do you have any additional comments or suggestions based on your experience?

An effort must be made to collate all comments from widespread locations to be certain all input is considered. Specific outreach may be made to members of the public who were directly impacted by the event. Businesses, residents, and transit riders are a few of those who may have experienced impacts caused by the planned special event. Since these individuals can be found at easily identifiable locations, or perhaps actively participated in the review and comment of the traffic management plan during the event operations phase, it is easier to survey these stakeholders.

POST-EVENT DEBRIEFING

A post-event debriefing should be held to review what took place. The purpose of the debriefing is to: (1) examine what took place, (2) compare it to what was expected to happen, (3) identify what worked well, and (4) determine areas of improvement for future planned special events.

Meeting Organization

Ideally, the post-event debriefing should be planned during the event operations planning phase and before the event takes place. If that does not happen, the debriefing should still be held, but it may be more difficult to get full participation by all involved stakeholders.

The meeting should be scheduled at least a few days after the event, giving traffic management team members some time to absorb what took place during the event and an opportunity to put it into perspective. However, the meeting should not be delayed too long after the event so memories of what took place remain fresh.

The place and timing of the meeting should be such that maximum attendance is realized. Considerations should include: (1) the rotating schedules of those who may attend, (2) ease of access to the meeting location, and (3) potential conflicts with other events.

If there were significant interagency conflicts during the planning of the event, or during the event itself, a neutral location and moderator may improve dialogue during the meeting.

If these types of conflicts were not a problem, consideration should be given to having one of the traffic management team supervisors or incident commander lead the meeting. Whatever the case, the moderator

should be skilled in involving all the participants and in digging into responses to get to the root of any stated problems.

If the traffic management plan included a transportation management center, there may also be some advantages to holding the meeting at the TMC. Figure 10-5 shows a meeting room located inside a TMC. As indicated in the figure, there may be additional resources in the TMC which can be used, and having it available visually can help participants better understand what took place during the planned special event.



Figure 10-5
TMC Meeting Room

Meeting Agenda

It is important to remember that the post-event debriefing is not designed to be a time to blame individuals or agencies for what took place during the event. This should be reflected in the agenda developed for the meeting. It should clearly state the intended purpose of the meeting. This will help keep meeting attendees focused and provide added assurance that the meeting is designed to identify successes and lessons learned.

Stakeholders can agree on a general outline for the debriefing even before the event. This helps assure the debriefing covers top-

ics of interest to all participants and not designed to be biased against any stakeholder. Further details of the agenda can be filled in after the event and when problems requiring closer examination can be identified. Again, it would be beneficial if all participants had input into revising the agenda to make certain all concerns are addressed.

Table 10-6 lists the broad topic areas that should be covered in the post-event debriefing.

Table 10-6
Post-Event Debriefing Meeting
Agenda Topics

TOPIC AREA
<ul style="list-style-type: none"> • Purpose of meeting • The planning process • Interagency communications • Traffic management in and around the venue • Traffic management outside of the event site • Traveler information, including media • Lessons learned

Identification of Key Successes and Lessons Learned

The purpose of the post-event debriefing is not to just identify what could have been done better but to note what was successful. As has been the case from the start of the event operations planning process through the event itself, multiple viewpoints are helpful as stakeholders identify key successes and lessons learned. Depending upon perspective, one element of the plan may be viewed as a success by one party and seen as an area needing improvement by another.

Identifying these areas can be accomplished as each stakeholder individually reviews its actions leading up to and going through the event and as the stakeholders, as a group, review what took place.

It is helpful if participants are asked to identify, before the post-event debriefing, what they see as key successes and lessons learned. It may also prove beneficial if these notes are shared among the participants before the meeting to help facilitate discussion.

While identifying these points are very useful, it has little value unless there is some way to identify how to apply what is learned to the next planned special event. No one individual should be expected to serve as either the group's or their agency's corporate memory. The successes and lessons learned must be chronicled so that those stakeholders who are responsible for planning the next planned special event will be able to tap the wisdom of those who have done this before.

As an example, the following represents an excerpt, regarding traffic management and operations during Daytona Beach, FL Race Week (e.g., Daytona 500) and Bike Week, from the minutes of a regular, bi-monthly Volusia County (FL) Freeway Incident Management Team meeting:⁽³⁾

- *Race Week was February 14th to February 17th. Traffic was very heavy each day of the races. Friday the 15th had problems in Ormond Beach. There was an unexpected large outbound towards Ormond Beach. Saturday, Florida Highway Patrol, Ormond Beach PD, Daytona Beach PD, Volusia County Traffic Engineering, FDOT and Daytona Beach Traffic Engineering met to discuss traffic patterns and staffing for Ormond Beach so Friday's problems would not happen during the outbound of the Daytona 500 Race. Sunday's traffic was extremely heavy for the inbound. The free parking lot entrance on Williamson will need to be larger for next year. The*

traffic trying to enter this parking lot could not enter fast enough so, this area became grid locked. This area was grid locked from northbound Williamson to Beville, eastbound and westbound on Beville at Williamson further than the view of the traffic cameras. Capt. Duncan enforced a rolling roadblock on I-4 to stop traffic from entering this area. This gave traffic time to get into the parking lot. Video was collected of the new Pedestrian Overpass. This overpass was successfully used by thousands of race fans.

- Bike Week was March 1st to March 10th. Port Orange reported problems at Nova Road and Dunlawton. Mr. Lester stated they went out to this location to see if anything could be done with the traffic signal to alleviate the traffic congestion. Unfortunately, the signal was at its maximum timing and nothing could be changed.

POST-EVENT REPORT



Table 10-7 presents an outline of a typical post-event report.

Report Organization

A report that reviews the planned special event is necessary to document what was learned. By clearly outlining the material in the report, it becomes easier to identify the key successes and lessons learned. It also makes it easier to go back to the report and look at particular aspects of the traffic management plan implemented when planning the next planned special event.

Since the process of handling the planned special event follows a timeline, the easiest way to organize the report may involve reviewing what took place chronologically.

An alternative method of organizing the report concerns dividing it by subject areas such as traffic management, traveler information, command center operation, and communications. Since some areas overlap, there should be references in the report to other sections, which may have application in multiple areas.

Table 10-7
Outline of Post-Event Report

REPORT ORGANIZATION
<ul style="list-style-type: none"> • Outline report topics. • Document products of the event operations planning phase. • Identify key successes. • Present lessons learned. • Identify improvements for future events. • Configure to serve as a working document for future special event planning. • Review chronologically what took place. • Summarize both positive and negative aspects. • Include all stakeholder viewpoints.
OPERATIONAL COST ANALYSIS
<ul style="list-style-type: none"> • Examine operational costs. • Include staffing, overtime, and equipment for each involved agency. • Identify potential cost savings. <ul style="list-style-type: none"> ○ Reallocation of personnel ○ Division of responsibilities ○ Use of technology • Include total staffing, overtime, and equipment for all agencies.
QUALITATIVE EVALUATION
<ul style="list-style-type: none"> • Include survey of stakeholders. • Include survey of event patrons. • Include survey of public.
QUANTITATIVE EVALUATION
<ul style="list-style-type: none"> • Provide numerical picture of the event. <ul style="list-style-type: none"> ○ Costs ○ Hours saved ○ Traffic incidents handled ○ Passengers carried on various modes. • Present cost/benefit analysis.

The report should summarize both positive and negative aspects. Remember, this is not designed to be a public relations piece to promote the handling of the planned special event but a working document to assist future special event planning. If differing per-

spectives are noted during the debriefing process and there is not consensus on how to address a particular situation, all stakeholder viewpoints should be documented.

Table 10-8 lists the elements that should be included in a post-event report. As with the post-event debriefing, the post-event report should not blame individuals or organizations for anything that did not go well. The report should provide a factual recounting of the special event, including planning the event itself and what took place during the post-event debriefing. If opinions are noted in the report, then the opinions should be segregated from the factual information and noted as opinions.

Table 10-8
Elements of a Post-Event Report

ELEMENT
<ul style="list-style-type: none"> • A copy of the original traffic management plan • A combined chronology of the event, incorporating actions by all participants • List of recommended improvements • Statistical information (e.g., number of traffic incidents, number of CMS and HAR messages). • Survey results • General comments by participants

Operational Cost Analysis

Part of the evaluation process is to look at the operational costs of managing the planned special event. Expenses such as staffing, equipment and overtime should be noted by the agency incurring the expense.

This information should be broken down into categories that allow others to understand the costs and the specific efforts associated with the expenditures.

In the same way, operational decisions can be reviewed to identify areas that can be improved. Operational costs can also be re-

viewed with areas of potential cost saving identified. In some cases, these expenses may be in areas where the reallocation of personnel would result in reduced expenses or improved operations. In other areas, the use of technology may result in savings.

While individual stakeholders are responsible for gathering information on their own costs, there is also benefit in merging the figures of all agencies to have a better picture of total expenses for personnel and equipment. This may also provide opportunities to see how dividing responsibilities in different ways could result in cost savings. Among the costs that should be analyzed are overtime expenses, costs of deploying equipment, equipment rental costs, additional communications expenses, and expenses for public information efforts.

Qualitative Evaluation

The qualitative evaluation, while based on softer measures such as opinion and perspective, still provides a very valuable measure of the success in handling the planned special event. This is especially true when measuring patron and public views on the event. Quantitative measures may be easier to manage, but qualitative judgments may help determine the success of the plan. Even if the numbers show the plan was a success, if the qualitative evaluation shows significant dissatisfaction, it will be difficult to view the event in a positive light.

The qualitative evaluation is based on a number of factors, including the survey of the public and event patrons. Also important is the qualitative evaluation provided by those stakeholders who managed the event. If they view the exercise as a failure, it will be difficult to get them to fully commit to subsequent efforts for future planned special

events. Table 10-9 summarizes key topics of a qualitative evaluation.

Table 10-9
Key Topics of a Qualitative Evaluation

TOPIC
<ul style="list-style-type: none"> • Quality of pre-event information • Quality of day-of-event information • Direction provided to the event and at the venue • Traffic management at the site • Egress from the venue

Quantitative Evaluation

The quantitative evaluation provides a numerical picture of the event. Figures such as costs, hours saved, incidents handled, and passengers carried provide a view which can be compared with similar events and provide a metric to judge how well the traffic management plan worked. As the saying goes, what gets measured gets done. If that is the case, then involved stakeholders should identify, before the event, what they wish to measure. While computer programs allow any number of items to be tabulated and measured, a good understanding before the event will facilitate the measurement of the key areas identified.

The quantitative evaluation is very useful when conducting a cost/benefit analysis of activities for the planned special event. Knowing where the most benefit was realized for the costs incurred can help in the planning process to see if resources should be reallocated for the next event.

REFERENCES

1. *The Dutchess County Fair Traffic Plan*, New York State Department of Transportation, Presentation at the 2002 ITS New York Meeting, Saratoga Springs, Ny., June 5--7, 2002, 24 pp.
2. *Indiana State Police 2002 Brickyard Race Detail*, Indiana State Police, 2002.
3. "Minutes of the Volusia County Freeway Incident Management Team," Volusia County Freeway Incident Management Team, March 13, 2002.

CHAPTER ELEVEN

DISCRETE/RECURRING EVENT AT A PERMANENT VENUE



Figure 11-1

Discrete/Recurring Event at a Permanent Venue: Qualcomm Stadium in San Diego, CA

PURPOSE

In order to assist the user in planning for a particular planned special event, this chapter describes an advance planning and travel management process and considerations specific to a *discrete/recurring event at a permanent venue*. It summarizes recommended policies, guidelines, procedures, and resource applications that were previously discussed in the first ten chapters of this technical reference. This chapter presents these guidelines and procedures in tables, flowcharts, and checklists that can be followed to help guide the user through all the

stages of a planned special event of this category for a particular locale. Although Chapter 3 presents all the steps necessary to manage travel for a planned special event, this chapter provides a roadmap to help guide the user through all five phases of managing travel for planned special events, identifying issues, analysis, and products applicable to discrete/recurring events at a permanent venue. To further guide readers, this chapter specifies references to data, special considerations, and best practices for this event category.

INTRODUCTION

In order to guide the user, this chapter addresses four key topics, corresponding to five phases of managing travel for planned special events, including: (1) *event operations planning*, (2) *implementation and day-of-event activities*, (3) *post-event activities*, and (4) *program planning*. In planning for all planned special events in a region, the final section on program planning highlights issues to consider that evolve from and/or pertain to discrete/recurring events at a permanent venue. By following each one of the steps and procedures, the user will have identified and covered all the significant aspects that are necessary to result in successful management of travel for a planned special event with characteristics specific to a discrete/recurring event at a permanent venue.

A discrete/recurring event at a permanent venue occurs on a regular basis at a site zoned and designed specifically to accommodate planned special events. Table 11-1 indicates different types of planned special events classified as a discrete/recurring event at a permanent venue. This category includes events that occur in urban and metropolitan areas, and the rural event category includes discrete/recurring events at a permanent venue that take place in rural areas. Table 11-2 lists key characteristics of a discrete/recurring event at a permanent venue.

Table 11-1
Types of Discrete/Recurring Events at a Permanent Venue

EVENT TYPE
<ul style="list-style-type: none"> • Sporting and concert events at stadiums and arenas • Concert events at amphitheaters

Table 11-2
Distinguishing Operating Characteristics of a Discrete/Recurring Event at a Permanent Venue

CHARACTERISTIC
<ul style="list-style-type: none"> • Specific starting and predictable ending times • Known venue capacity • Advance ticket sales • Weekday event occurrences

Special Considerations

In light of the characteristics of a discrete/recurring event at a permanent venue, special considerations when planning such an event include:

- Permanent venues located in urban areas usually have exclusive off-street parking to accommodate capacity events, and good access exists between venue parking areas and freeway/arterial corridor traffic flow routes serving the venue.
- In metropolitan areas, permanent venues often feature high-capacity connections (e.g., transit) to the transportation system serving the region.
- Parking areas at many permanent venues exist immediately adjacent to the venue, creating a more self-contained site traffic circulation and pedestrian access environment similar to other major, permanent traffic generators (e.g., airports and regional shopping centers).
- These events generate high peak arrival rates because of event patrons': (1) urgency to arrive at the venue by a specific start time and (2) possession of a reserved seat ticket that does not require early arrival.
- Special events that have general admission seating or permit tailgating have lower, yet pronounced, peak arrival rates.
- Discrete/recurring events at a permanent venue end abruptly, thus creating high

peak pedestrian and traffic departure rates.

- The travel demand rate profile, over time, represents a distinguishing characteristic that warrants special consideration during advanced planning and day-of-event travel management.
- Event characteristics, such as known venue capacity and advance ticket sales, afford practitioners the opportunity to perform travel demand forecasts with greater precision and accuracy.
- Discrete/recurring events at a permanent venue allow the collection of transferable historical data that improves predictability in feasibility study traffic and parking analyses for future events held at a particular venue.
- Experience gained from each planned special event can be used to further improve the identification and mitigation of roadway capacity deficiencies.
- Weekday events place a high priority on prediction and stakeholder preparation because of potential impacts on commuter traffic and transit operations.

EVENT OPERATIONS PLANNING



The level of stakeholder effort required under the event operations planning phase for a discrete/recurring event at a permanent venue depends on whether a venue traffic management plan already exists. The event planning team focuses either on developing a new plan or modifying an existing traffic management plan designed and implemented for past events at the subject venue. In the latter case, the event planning team should conduct a review of past, pertinent feasibility studies for each proposed event. This will help to identify special transportation characteristics of each event and identify similarities to previously held events.

Attendance, time of occurrence, previous lessons learned, and other special circumstances should be considered during this review.

Figure 11-2 presents 31 steps in the event operations planning process for all planned special events. The flowchart covers development and integration of the phase's three primary products: feasibility study, traffic management plan, and travel demand management initiatives. Table 11-3 complements the flowchart by providing step-by-step guidance on issues and recommended analyses for a discrete/recurring event at a permanent venue. The table also presents reference information contained in this handbook that is specific to discrete/recurring events at a permanent venue. While all of the major handbook topics under event operations planning apply to a discrete/recurring event at a permanent venue, Table 11-3 indicates data, planning considerations, and agency example applications (e.g., via narratives or photos) within the context of this event category. In turn, practitioners can use example applications presented for a discrete/recurring event at a permanent venue to manage travel for other categories of planned special events.

It is important for the user to note that the planning process described herein applies to a single special event occurrence only. Feasibility study results and traffic management plan specifications vary for: (1) recurring events of the same type (e.g., all home games for a specific sports team) and (2) capacity events of different types held at the same venue (e.g., a sold-out sporting event versus sold-out concert at the same stadium). In the former case, practitioners should conduct an iterative event operations planning process in order to develop traffic

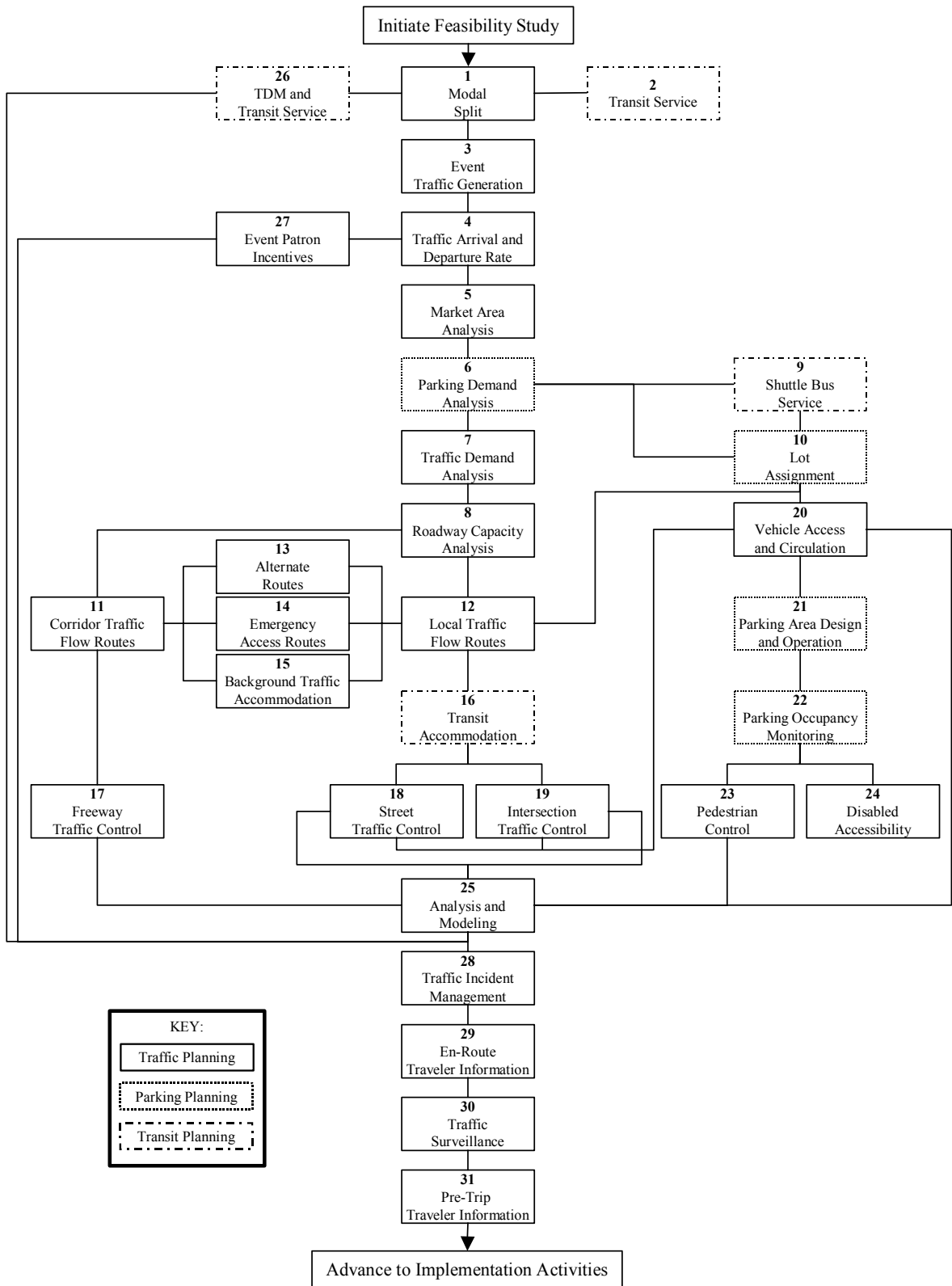


Figure 11-2
Event Operations Planning Process Flowchart

Table 11-3
Event Operations Planning Steps
Discrete/Recurring Event at a Permanent Venue

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
1	5-20	<ul style="list-style-type: none"> Potential high level of express/charter bus service for sporting events. Review of historical transit data. 	• <i>Data:</i> Percentage of walking trips for on-campus college football games.	5-21
			• <i>Data:</i> Example modal split for various permanent venues; Table 5-12.	5-21
2	7-9	<ul style="list-style-type: none"> Impact of weekday events on non-attendee transit users. 	• <i>Example:</i> Express bus services.	7-11
			• <i>Example:</i> Charter bus service.	7-13
3	5-21	<ul style="list-style-type: none"> Variation in vehicle occupancy by event type, event day/time, and venue location. 	• <i>Data:</i> Vehicle occupancy factor; Table 5-14.	5-23
4	5-22	<ul style="list-style-type: none"> Change in peak arrival rate by event type and day/time. 	• <i>Data:</i> Traffic arrival rate characteristics; Table 5-15.	5-24
			• <i>Special consideration:</i> Traffic operations during event patron departure.	5-23
5	5-25	<ul style="list-style-type: none"> Use of origin location analysis. Larger market area for major concert and sporting events. Attraction of non-home based trips for week-day events. 	• <i>Data:</i> Estimate of non-home based trips for a downtown venue.	5-26
			• <i>Special consideration:</i> Recommended market area analysis methodology and considerations.	5-26
			• <i>Example:</i> Appendix E – Regional directional distribution.	5-25
6	5-27	<ul style="list-style-type: none"> Very low turnover during event. 		
7	5-29			
8	5-30	<ul style="list-style-type: none"> Analysis of peak arrival and departure periods. 		
9	6-32	<ul style="list-style-type: none"> Design of service to expand and contract (e.g., number of buses operating) based on event patron arrival/departure rates throughout the day-of-event. 	• <i>Special consideration:</i> Shuttle bus service design.	6-33
			• <i>Special consideration:</i> Shuttle bus service cost.	6-36
10	6-13	<ul style="list-style-type: none"> Significant media parking requirement for major sporting events. 		
11	6-38		• <i>Example:</i> Plan showing target points; Figure 6-30.	6-39
			• <i>Example:</i> Appendix I – Traffic flow maps.	6-47
12	6-38		• <i>Example:</i> Plan showing multiple local traffic flow routes; Figure 6-31.	6-39
			• <i>Example:</i> Appendix I – Traffic flow maps.	6-47
13	6-40			
14	6-41			
15	6-43	<ul style="list-style-type: none"> Key consideration for downtown venues and venues adjacent to residential and business areas. 		
16	6-45			
17	6-49		• <i>Example:</i> Temporary elimination of freeway weaving area; Figure 6-39.	6-53
			• <i>Example:</i> Prohibition of late freeway diverge; Figure 6-40.	6-53
			• <i>Example:</i> Remote traffic surveillance and management; Figure 6-41.	6-53
			• <i>Example:</i> Appendix K – Traffic control plans and maps.	6-59
18	6-51		• <i>Example:</i> Contraflow operation during event traffic egress; Figure 6-44.	6-54
			• <i>Example:</i> Appendix K – Traffic control plans and maps.	6-59
19	6-57		• <i>Example:</i> Elimination of competing intersection traffic flow; Figure 6-50.	6-57
			• <i>Example:</i> Achieving intersection turning movement lane balance; Figure 6-51.	6-57
			• <i>Example:</i> Roadblock of ingress route to facilitate egress; Figure 6-52.	6-58
			• <i>Example:</i> Intersection advance signing; Figure 6-53.	6-58

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
			<ul style="list-style-type: none"> • <i>Example:</i> Appendix J – Operation of centralized traffic signal system. 	6-59
			<ul style="list-style-type: none"> • <i>Example:</i> Appendix K – Traffic control plans and maps. 	6-59
20	6-16	<ul style="list-style-type: none"> • Vehicle cruising after event to pick-up event patrons. 	<ul style="list-style-type: none"> • <i>Example:</i> En-route information dissemination on site access and parking; Figure 6-6. 	6-14
			<ul style="list-style-type: none"> • <i>Example:</i> Temporary parking area identification landmark; Figure 6-8. 	6-15
			<ul style="list-style-type: none"> • <i>Example:</i> Implementation of lane channelization on a parking area access road; Figure 6-10. 	6-18
			<ul style="list-style-type: none"> • <i>Example:</i> Strategy for eliminating taxi/limo cruising at the end of an event. 	6-19
			<ul style="list-style-type: none"> • <i>Example:</i> Appendix H – Site and parking maps; Figures 6-16 and 6-17. 	6-25, 6-27
21	6-20	<ul style="list-style-type: none"> • Key consideration for event ingress operations. 	<ul style="list-style-type: none"> • <i>Special consideration:</i> Permanent venue gate and queue storage lanes; Figure 6-13. 	6-21
22	6-23			
23	6-28	<ul style="list-style-type: none"> • Pedestrian overcrowding near venue. 	<ul style="list-style-type: none"> • <i>Special consideration:</i> Pedestrian arrival and departure rates. 	6-27
			<ul style="list-style-type: none"> • <i>Example:</i> Pedestrian traffic monitoring via closed-circuit television; Figure 6-21. 	6-29
24	6-32			
25	6-9	<ul style="list-style-type: none"> • Analysis of peak ingress and egress travel periods. 		
26	7-2 to 7-14	<ul style="list-style-type: none"> • High applicability of HOV incentives and express/charter bus service to this event category. 	<ul style="list-style-type: none"> • <i>Example:</i> High occupancy vehicle incentives; Figure 7-3. 	7-3, 7-5
			<ul style="list-style-type: none"> • <i>Example:</i> Transit service marketing. 	7-13
27	7-6	<ul style="list-style-type: none"> • Particularly applicable to managing event arrival and departure rate. 	<ul style="list-style-type: none"> • <i>Special consideration:</i> Recommended event patron incentives. 	7-6
			<ul style="list-style-type: none"> • <i>Example:</i> Survey on event patron incentives; Figure 7-4. 	7-7
28	6-72		<ul style="list-style-type: none"> • <i>Example:</i> Public information safety campaign. 	6-73
			<ul style="list-style-type: none"> • <i>Example:</i> Highway advisory radio traveler safety message; Figure 6-61. 	6-74
29	6-61		<ul style="list-style-type: none"> • <i>Example:</i> Permanent changeable message sign over stadium access road; Figure 6-56. 	6-64
30	6-70			
31	7-14	<ul style="list-style-type: none"> • Dissemination of traveler information through event and venue websites. • Dissemination of transportation guide with advance ticket mailings. 	<ul style="list-style-type: none"> • <i>Example:</i> Appendix L – Public agency and event-specific websites. 	7-17
			<ul style="list-style-type: none"> • <i>Example:</i> Telephone information systems; Figure 7-9. 	7-19
			<ul style="list-style-type: none"> • <i>Example:</i> Public information campaign. 	7-19
			<ul style="list-style-type: none"> • <i>Example:</i> Appendix M - Venue transportation guides. 	7-21
			<ul style="list-style-type: none"> • <i>Example:</i> Television travel report; Figure 7-12. 	7-22

management plans for a range of future event scenarios, varying by characteristics such as attendance and time of occurrence. Example scenarios include expected high-attendance events because of special promotions or circumstances and weeknight football games versus traditional weekend

games. In the latter case, different event types have dissimilar event operation characteristics such as market area, audience accommodation, and time of occurrence. Available transportation services and stakeholder resources may vary from one capacity event to another. For instance, an exclu-

sive express bus service between area park-and-ride lots and a stadium may operate for Sunday football games but not for a concert at the same facility because of resource constraints.

The flowchart in Figure 11-2 represents a suggested order of event operations planning activities. However, as noted below, the event planning team can modify activities to create a dynamic and more effective planning process tailored to the scope of a specific planned special event:

- Based on lessons learned from past special events at a particular permanent venue, stakeholders may program new infrastructure or adopt new policies (e.g., parking restrictions) early in the event operations planning process.
- Links between process steps are two-way as stakeholders evaluate alternative strategies and/or integrate traffic management plan components.
- The event planning team can develop different traffic management plan components concurrently.

The event operations planning process references information and concepts contained in the advance planning section of this handbook, and it directs the user to recommended guidelines, procedures, strategies, and resource applications for managing travel for a specific planned special event. When following the process, practitioners should review:

- Important advance planning considerations and external factors, summarized in Chapter 5, that influence planning activities. For instance, under risk assessment, scenarios relating to fan celebrations and excessive overcrowding may warrant consideration if planning for a major sporting or concert event.

- Traffic management plan components in Chapter 6 that provide an overview of various principles driving plan development in addition to a contingency plan checklist.

IMPLEMENTATION AND DAY-OF-EVENT ACTIVITIES

The traffic management team that manages travel for a discrete/recurring event at a permanent venue usually has familiarity with traffic patterns and potential flow breakdown points in the vicinity of the site, primarily based on their past experience on previously held special events at the same venue. Hence, stakeholder development of implementation plan details focus on transportation operation successes and lessons learned for previous, similar events at the subject venue. Special events regularly occur at stadium, arena, and amphitheater venues. Involved traffic operations and law enforcement personnel, for instance, maintain a level of preparedness akin to that of traffic incident responders.

Table 11-4 presents a checklist of implementation and day-of-event activities for stakeholders to consider regarding any discrete/recurring event at a permanent venue. As indicated in the table, the event planning team must determine, based on various event operations characteristics (e.g., event type, event location, event time of occurrence, attendance, market area, etc.) and other external factors, what unique set of activities apply in handling a specific special event. The table facilitates fast access to handbook sections providing detailed guidance, including recommended strategies, protocol, and resource applications, required by users to plan and execute these activities.

Table 11-4
Checklist of Implementation and Day-of-Event Activities for Discrete/Recurring Events at a
Permanent Venue

HANDBOOK PAGE	ACTION	APPLIES <input checked="" type="checkbox"/>
8-2	• Develop an implementation plan.	<input type="checkbox"/>
8-6	• Conduct a stakeholder simulation exercise(s).	<input type="checkbox"/>
8-8	• Test equipment resources slated for use on the day-of-event.	<input type="checkbox"/>
8-9	• Recruit and train volunteers to fulfill personnel resource needs.	<input type="checkbox"/>
9-2	• Implement a traffic management team management process.	<input type="checkbox"/>
9-4	• Designate a multi-agency command post.	<input type="checkbox"/>
9-6	• Conduct traffic management plan evaluation(s) during the day-of-event.	<input type="checkbox"/>
9-6	• Establish protocol for traffic management team officials to consider and implement changes to the traffic management plan to accommodate real-time traffic conditions.	<input type="checkbox"/>
9-8	• Establish interagency communication protocol.	<input type="checkbox"/>
9-9	• Review communication equipment compatibility.	<input type="checkbox"/>
9-10	• Use the media to communicate with event patrons and other transportation users.	<input type="checkbox"/>
9-12	• Perform traffic monitoring on the day-of-event.	<input type="checkbox"/>

Some distinguishing considerations of this event category during the day-of-event activities phase include:

- Because of the numerous planned special events held annually at a permanent venue, stakeholders typically have a set location for an on-site command post. For larger venues in metropolitan areas, the command post may reside inside the venue, contain permanently installed equipment (e.g., computer and communication connections, video monitors, etc.), and function as a satellite transportation management center.
- Interagency communication structure and protocol is generally well established and understood by all participating personnel.
- Traffic advisory services often monitor special events at permanent venues and disseminate traveler information accord-

ingly, and the media provides significant coverage of major sporting events that usually includes traveler information and transportation system operations monitoring. The traffic management team may interact with these information providers on the day-of-event.

- The collection and evaluation of transportation system performance data proves valuable in guiding decision-making for future discrete/recurring events at a permanent venue. Stakeholders can archive raw data for use in future feasibility studies, and various evaluation measures can identify specific areas that require improvement for future, similar events at the subject venue. The traffic management team must exercise great care in collecting performance evaluation data in order to ensure data quality and consistency.


POST-EVENT ACTIVITIES

Since a discrete/recurring event at a permanent venue has the benefit of numerous events having been held at the site, it is usually not necessary to conduct all post-event activities normally required for other event categories. Table 11-5 presents a checklist of post-event activities applicable to any discrete/recurring event at a permanent venue. Certain special events of this category (e.g., new event type at venue, state-wide/national market area, etc.) that present a challenging and potentially recurring travel management scenario for stakeholders warrant most, if not all, activities listed in the table. The post-event activities section of this handbook provides detailed information on common techniques, special considerations, and recommended protocol that facilitate the activities listed in Table 11-5.

Some distinguishing considerations of this event category during the post-event activities phase include:

- Post-event debriefings represent a common and recommended stakeholder activity regarding discrete/recurring events at a permanent venue.
 - On a regional level, such meetings may coincide with a regular traffic incident management team meeting.
 - With major discrete/recurring events (e.g., capacity or near-capacity) often regularly occurring at permanent venues, the event planning team and traffic management team may use a post-event debriefing as a basis to update a traffic management plan and travel demand management initiatives for future planned special events at the venue.

Table 11-5
Checklist of Post-Event Activities for Discrete/Recurring Events at a Permanent Venue

HANDBOOK PAGE	ACTION	APPLIES 
10-2	• Review measures of effectiveness identified in event operations planning phase.	<input type="checkbox"/>
10-3	• Compile agency measures of effectiveness.	<input type="checkbox"/>
9-14	• Compile performance evaluation data.	<input type="checkbox"/>
10-5	• Conduct stakeholder participant debriefing.	<input type="checkbox"/>
10-6	• Conduct event patron survey.	<input type="checkbox"/>
10-7	• Conduct public survey.	<input type="checkbox"/>
10-7	• Conduct a post-event debriefing meeting.	<input type="checkbox"/>
10-10	• Prepare a post-event report.	<input type="checkbox"/>

- Public surveys warrant strong consideration for special events under this category as event performance evaluation data fails to assess all community impacts.
 - Though not necessary for every event occurrence, stakeholders may conduct a public survey: (1) after the first of a series of recurring special events (e.g., sports season), (2) after receiving negative feedback through community interest stakeholders, or (3) after a specified period of time (e.g., annually or every few years) for all events held at a particular permanent venue.
 - Survey results alert special event stakeholders of impacts to affected residents and businesses, in addition to non-attendee transportation system users, that may continue to occur with each successive major special event at a particular permanent venue. As a result, stakeholders can develop and implement appropriate strategies (e.g., enforcement, etc.) to mitigate the identified impact(s) for future planned special events. Traffic management team efforts also would include monitoring known community impacts on the future day-of-event followed by a post-event evaluation.

Stakeholders that have a consistent role in managing travel for planned special events at a particular permanent venue can address recurring needs and improve the planning process for future events through various regional planned special event program initiatives.

Table 11-6 summarizes program planning activities for discrete/recurring events at a permanent venue.

Some distinguishing considerations of this event category during the program planning phase include:

- The fixed location of major planned special event venues allows for the easy identification of stakeholder representatives involved in regular planning and day-of-event travel management for special events at these venues. Under a regional planned special events program framework, these representatives collaborate as a task force, working to: (1) strengthen interagency coordination for future special events, (2) identify needs relative to minimizing community impacts and improving transportation system operations during venue events. The latter involves proposing new policies, regulations, and infrastructure deployments to support future event-specific traffic management plans and travel demand management initiatives.
- Permanent infrastructure deployments prove cost-effective at permanent venues hosting numerous planned special events or multiple major events in a calendar year. As indicated in Table 11-6, infrastructure deployment also includes new transportation services designed to increase transportation system capacity during a planned special event. For instance, a transit agency may design and

PROGRAM PLANNING



Program planning activities involve the development of policies, programs, and initiatives that facilitate improved planning and management of travel for future planned special events. Program planning activities for all planned special events in a region have a high level of applicability to discrete/recurring events at a permanent venue.

market an express bus service for an entire sports season.

- The occurrence of major discrete/recurring events at a permanent venue (e.g., roving sports championship events, auto races, other capacity events, etc.) often serve as a platform for stakeholders to assess new services and infrastructure proposed for a single, major special event in the context of supporting: (1) all special planned special events

in a region and (2) day-to-day transportation system operations. The foreknowledge of planned special events allow stakeholders to work with transportation agency administrators in order to incorporate pertinent planned special events initiatives in agency budgets and/or transportation improvement programs.

Table 11-6
Program Planning Activities for Discrete/Recurring Events at a Permanent Venue

PRODUCT	TOPIC	PAGE NO.
Institutional frameworks	• Creation of a regional transportation committee on planned special events (e.g., oversight team).	2-15 4-2 5-3
	• Creation of a transportation operations task force for a specific permanent venue.	5-3
	• Development of a joint operations policy.	5-15
Policies and regulations	• Traffic and parking restrictions.	5-10
	• Public-private towing agreements.	5-16
	• Public information safety campaign.	6-73
	• High occupancy vehicle incentives.	7-3
Infrastructure deployment	• Advanced parking management system.	6-15
	• Electronic fee collection system.	6-22
	• Planned alternate route for diverting background traffic around a venue.	6-40
	• Portable traffic management system.	6-56
	• Express, charter, or shuttle bus service.	6-32 7-11 7-12
	• Telephone information systems.	7-17
	• Kiosks.	7-21

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CHAPTER TWELVE

CONTINUOUS EVENT

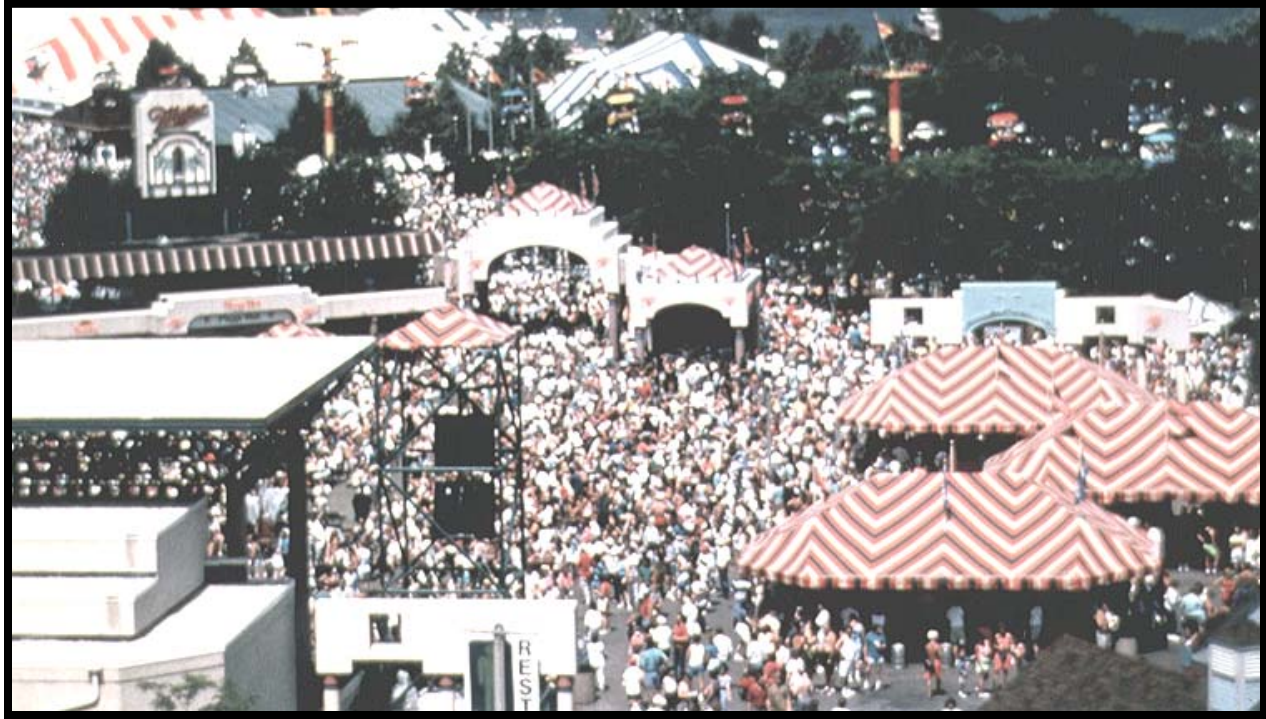


Figure 12-1
Continuous Event: Summerfest Music Festival in Milwaukee, WI
(Photo courtesy of the Wisconsin DOT.)

PURPOSE

In order to assist the user in planning for a particular planned special event, this chapter describes an advance planning and travel management process and considerations specific to a *continuous event*. It summarizes recommended policies, guidelines, procedures, and resource applications that were previously discussed in the first ten chapters of this technical reference. This chapter presents these guidelines and procedures in tables, flowcharts, and checklists that can be followed to help guide the user through all the stages of a planned special event of this category for a particular locale. Although Chapter 3 presents all the steps

necessary to manage travel for a planned special event, this chapter provides a roadmap to help guide the user through all five phases of managing travel for planned special events, identifying issues, analysis, and products applicable to continuous events. To further guide readers, this chapter specifies references to data, special considerations, and best practices relating to this event category.

INTRODUCTION

In order to guide the user, this chapter addresses four key topics, corresponding to five phases of managing travel for planned special events, including: (1) *event opera-*

tions planning, (2) implementation and day-of-event activities, (3) post-event activities, and (4) program planning. The final section on program planning highlights issues to consider, that evolve from and/or pertain to continuous events, in planning for all planned special events within a region or jurisdiction. By following each one of the steps and procedures, the user will have identified and covered all the significant aspects that are necessary to result in successful management of travel for a planned special event with characteristics specific to a continuous event.

Table 12-1 indicates different types of planned special events classified as a continuous event. This category includes events that occur in urban and metropolitan areas, and the rural event category includes continuous events that take place in rural areas. Aside from conventions and state/county fairs, many continuous events take place at a temporary venue, a park, or other large open space. These venues host planned special events on a less frequent basis than permanent multi-use venues, and planned special event permitting typically governs whether a temporary venue can adequately handle the transportation impact of a particular continuous event. Table 12-2 lists key characteristics of a continuous event.

Table 12-1
Types of Continuous Events

EVENT TYPE
<ul style="list-style-type: none"> • Fairs • Festivals • Conventions and expos • Air and automobile shows

Table 12-2
Distinguishing Operating Characteristics of a Continuous Event

CHARACTERISTIC
<ul style="list-style-type: none"> • Occurrence often over multiple days • Arrival and departure of event patrons throughout the event day • Typically little or no advance ticket sales • Capacity of venue not always known • Occurrence sometimes at temporary venues

Special Considerations

In light of the characteristics of a continuous event, special considerations when planning such an event include:

- Daily attendance, a key input in the travel forecast analysis process, is often difficult to estimate, and day-of-event weather conditions may significantly affect it.
- The traffic generation characteristics and market area of different continuous events may vary considerably, thus limiting the transfer of historical data between non-identical special events.
- Most events do not have an attendance capacity or defined “sell-out.”
- Venues may have limited access to transit stations and adjacent high-capacity arterial roadways and freeways.
- High attendance events in downtown areas require extensive planning for parking and travel demand management.
- Major continuous events typically generate trips from a multi-county region.
- Potential weather impacts require the consideration of a wide range of contingency plans relative to site access, parking, pedestrian access, traffic control, and traffic incident management.
- Continuous events held at temporary venues may significantly impact nearby neighborhood residents and businesses.

EVENT OPERATIONS PLANNING



Because of the contrasting characteristics of different continuous events and the respective venues hosting these events, the event planning team should develop (1) a feasibility study, (2) a traffic management plan, and (3) travel demand management initiatives (as necessary) in the event operations planning phase. The stakeholder composition of an event planning team varies by event, as some continuous events represent community or not-for-profit events while others involve commercial dealings. Recurring continuous events, such as an annual fair or air show, permit stakeholders to reference a past feasibility study and traffic management plan, coupled with operations successes and lessons learned, when conducting advance planning activities for a future event. However, due to the significant time between recurring continuous events, the event planning team must anticipate (1) changes in the operations characteristics of a future event, (2) modifications to the transportation system serving the event, and (3) changes in the community (e.g., land use, socioeconomic, regulations, etc.).

Figure 12-2 presents 31 steps in the event operations planning process for all planned special events. The flowchart covers development and integration of the phase's aforementioned three products. Table 12-3 complements the flowchart by providing step-by-step guidance on issues and recommended analyses for a continuous event. The table also presents reference information contained in this handbook that is specific to continuous events. While all of the major handbook topics under event operations planning apply to a continuous event, Table 12-3 indicates data, planning considerations, and agency example applications

(e.g., via narratives or photos) within the context of this event category. In turn, practitioners can use example applications presented for a continuous event to manage travel for other categories of planned special events.

The flowchart in Figure 12-2 represents a suggested order of event operations planning activities. However, as noted below, the event planning team can modify activities to create a dynamic and more effective planning process tailored to the scope of a specific planned special event:

- A jurisdiction planned special event permit process and requirements will scope, schedule, and direct event operations planning activities for continuous events.
- Links between process steps are two-way as stakeholders evaluate alternative strategies and/or integrate traffic management plan components.
- The event planning team can develop different traffic management plan components concurrently.

The event operations planning process references information and concepts contained in the advance planning section of this handbook, and it directs the user to recommended guidelines, procedures, strategies, and resource applications for managing travel for a specific planned special event. When following the process, practitioners should review:

- Advance planning and travel management process and considerations provided in Chapter 11, as appropriate, for continuous events that occur at a permanent venue (e.g., stadium, arena, amphitheater, and convention center).

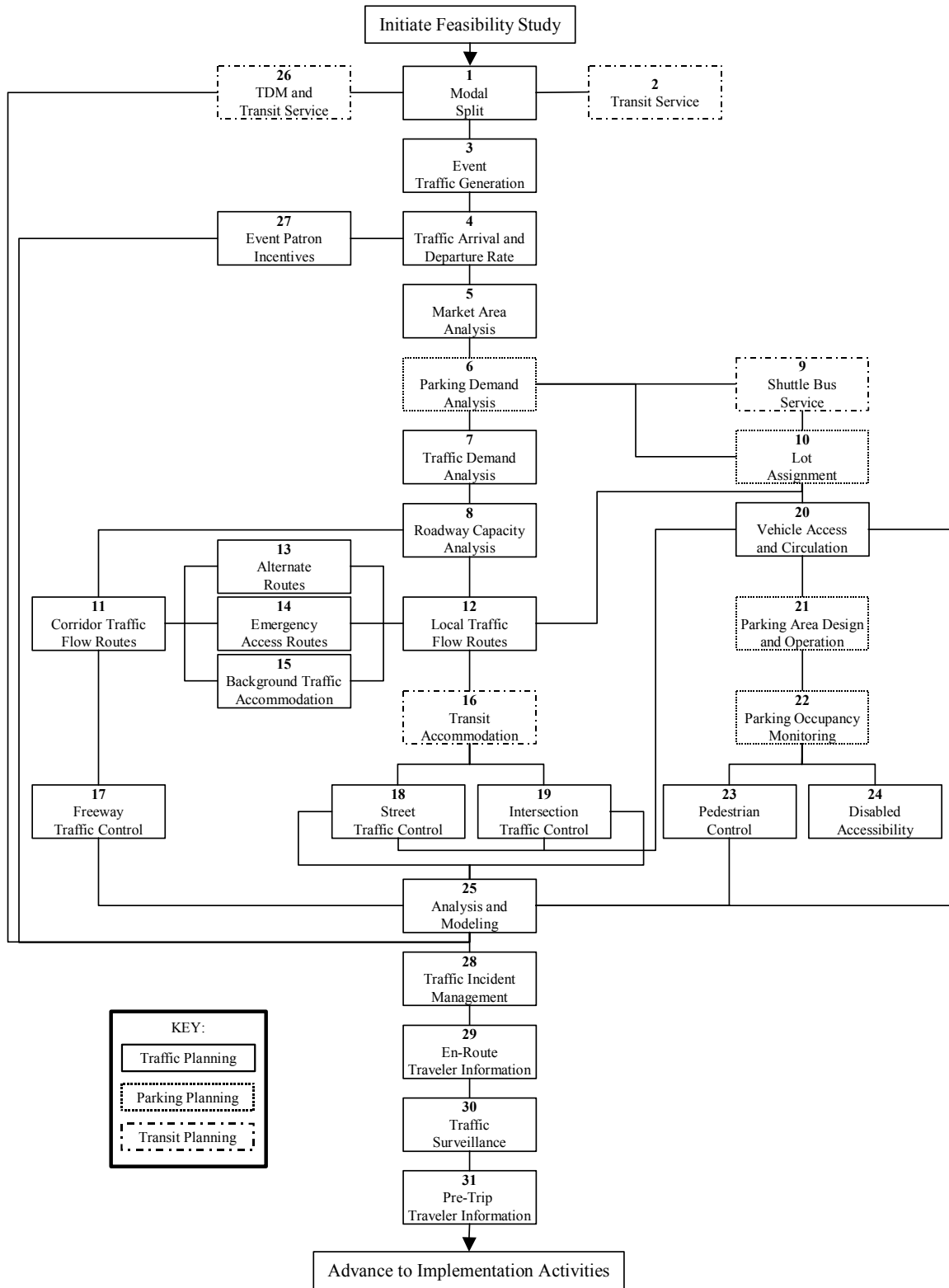


Figure 12-2
Event Operations Planning Process Flowchart

Table 12-3
Event Operations Planning Steps
Continuous Event

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
1	5-20		• <i>Example:</i> Appendix D – Internet-based event patron evaluation survey.	5-21
2	7-9	• Potential financial incentive for transit service to provide express/charter service.		
3	5-21	• Variation in daily attendance on each day of a multi-day event. • Impact of weather on attendance (if open-air venue).	• <i>Data:</i> Daily attendance split for multi-day continuous events.	5-22
			• <i>Data:</i> Vehicle occupancy factor; Table 5-14.	5-23
			• <i>Special consideration:</i> Estimating daily attendance.	5-22
4	5-22	• Peak rates may increase if event features headline entertainment. • Impact of weather on time of arrival and/or departure (if open-air venue).	• <i>Data:</i> Traffic arrival rate characteristics; Table 5-15.	5-24
			• <i>Special consideration:</i> Using historical data to estimate traffic arrival rate.	5-24
5	5-25	• Use of travel time or distance analysis if no advance ticket sales. • Market area includes the community or region the event is staged for.	• <i>Special consideration:</i> Recommended market area analysis methodology.	5-25
			• <i>Special consideration:</i> Market area analysis.	5-25
6	5-27	• Continuous turnover during event. • Use of off-site parking areas.	• <i>Special consideration:</i> Parking demand analysis.	5-27
			• <i>Example:</i> Designated event off-site parking area; Figure 5-11.	5-29
7	5-29	• Analysis of conditions prior to, during, and after event.		
8	5-30	• Possible composite traffic volume peak during the event.		
9	6-32	• Design of service to operate throughout the event. • Increased round-trip travel time if loading occurs both at parking areas and at venue.	• <i>Special consideration:</i> Shuttle bus service cost.	6-36
10	6-13	• Secure of lease or agreement for off-site lots.		
11	6-38			
12	6-38	• Consideration of ingress and egress operations during the event.		
13	6-40			
14	6-41			
15	6-43		• <i>Example:</i> Accommodation of traffic destined to major generators; Figure 6-35.	6-44
16	6-45			
17	6-49			
18	6-51			
19	6-57			
20	6-16	• Two-way traffic during event.		
21	6-20	• Potential use of unpaved parking areas.		
22	6-23	• Variation of parking occupancy during the event.		
23	6-28	• Two-way pedestrian traffic during event.	• <i>Special consideration:</i> Pedestrian traffic.	6-27
			• <i>Example:</i> Pedestrian access route and emergency access route; Figure 6-22.	6-30
			• <i>Example:</i> Road closure adjacent to event venue; Figure 6-24.	6-31
			• <i>Example:</i> Staffed mid-block pedestrian crossing; Figure 6-25.	6-31
24	6-32	• Strong consideration for temporary venues.	• <i>Special consideration:</i> Disabled parking spaces.	6-32
			• <i>Example:</i> Special event disabled parking area access point; Figure 6-26.	6-32

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
25	6-9	<ul style="list-style-type: none"> Analysis of peak period during event as well as peak ingress and egress. Consideration of detailed analysis (e.g., table-top exercises) for temporary venues. 		
26	7-2 to 7-14	<ul style="list-style-type: none"> High applicability of HOV incentives, bicyclist accommodation, public transit incentives, and express/charter bus service to this event category. 	<ul style="list-style-type: none"> <i>Example:</i> High occupancy vehicle incentive; Figure 7-2. 	7-5
			<ul style="list-style-type: none"> <i>Example:</i> Bicycle parking area; Figure 7-6. 	7-8
			<ul style="list-style-type: none"> <i>Example:</i> Express bus service. 	7-12
27	7-6			
28	6-72			
29	6-61	<ul style="list-style-type: none"> Emphasis on portable roadside traveler information devices for temporary venues. 		
30	6-70	<ul style="list-style-type: none"> Emphasis on portable closed-circuit television, field observation, and/or aerial observation for temporary venues. 		
31	7-14	<ul style="list-style-type: none"> Key step for infrequent events. 	<ul style="list-style-type: none"> <i>Example:</i> Traffic information dissemination via public agency website; Figure 7-7. 	7-16
			<ul style="list-style-type: none"> <i>Example:</i> Appendix L - Event-specific website. 	7-17

- Important advance planning considerations and external factors, summarized in Chapter 5, that influence planning activities. For instance, effective and rapid stakeholder review of event operations planning products requires: (1) an annotated planning timeline, (2) a review process, and (3) performance standards.
- Traffic management plan components in Chapter 6 that provide an overview of various principles driving plan development in addition to a contingency plan checklist.

IMPLEMENTATION AND DAY-OF-EVENT ACTIVITIES



Implementation activities represent an essential phase in advance planning for continuous events. The traffic management team involves new interagency relationships, and it requires an event-specific implementation plan to communicate specifics of the new traffic management plan prepared by the event planning team. Because par-

ticular continuous event types occur infrequently, stakeholder simulation exercises prove valuable in assisting traffic management team personnel understand the roles and responsibilities of participating stakeholders in addition to the actions taken on the day-of-event. Equipment testing marks another key consideration. These intensive stakeholder activities reflect the typical unfamiliarity with managing travel for a continuous event coupled with the fact that transportation management activities, on the order required for a planned special event, may not regularly take place in the vicinity of the event venue.

Table 12-4 presents a checklist of implementation and day-of-event activities for stakeholders to consider regarding any continuous event. As indicated in the table, the event planning team must determine, based on various event operations characteristics (e.g., event type, event location, event time of occurrence, attendance, market area, etc.) and other external factors, what unique set of activities apply in handling a specific special event. The table facilitates fast access to handbook

Table 12-4
Checklist of Implementation and Day-of-Event Activities for Continuous Events

HANDBOOK PAGE	ACTION	APPLIES <input checked="" type="checkbox"/>
8-2	<ul style="list-style-type: none"> Develop an implementation plan. 	<input type="checkbox"/>
8-6	<ul style="list-style-type: none"> Conduct a stakeholder simulation exercise(s). 	<input type="checkbox"/>
8-8	<ul style="list-style-type: none"> Test equipment resources slated for use on the day-of-event. 	<input type="checkbox"/>
8-9	<ul style="list-style-type: none"> Recruit and train volunteers to fulfill personnel resource needs. 	<input type="checkbox"/>
9-2	<ul style="list-style-type: none"> Implement a traffic management team management process. 	<input type="checkbox"/>
9-4	<ul style="list-style-type: none"> Designate a multi-agency command post. 	<input type="checkbox"/>
9-6	<ul style="list-style-type: none"> Conduct a traffic management plan evaluation(s) during the day-of-event. 	<input type="checkbox"/>
9-6	<ul style="list-style-type: none"> Establish protocol for traffic management team officials to consider and implement changes to the traffic management plan to accommodate real-time traffic conditions. 	<input type="checkbox"/>
9-8	<ul style="list-style-type: none"> Establish interagency communication protocol. 	<input type="checkbox"/>
9-9	<ul style="list-style-type: none"> Review communication equipment compatibility. 	<input type="checkbox"/>
9-10	<ul style="list-style-type: none"> Use the media to communicate with event patrons and other transportation users. 	<input type="checkbox"/>
9-12	<ul style="list-style-type: none"> Perform traffic monitoring on the day-of-event. 	<input type="checkbox"/>

sections providing detailed guidance, including recommended strategies, protocol, and resource applications, required by users to plan and execute these activities.

Some distinguishing considerations of this event category during the day-of-event activities phase include:

- The scope and duration of continuous events, especially those that occur over multiple days, demand a significant level of personnel resources. Supplementing traffic management team personnel with temporary staff and volunteers may represent a necessary action to meet daily staffing requirements. However, many volunteers have no past experience in tasks associated with traffic and pedestrian control and parking operations. As a result, volunteer training becomes paramount to the success of day-of-event operations. Chapter 8 contains checklists and relevant considerations for as-

sessing personnel resource needs and using volunteers on the day-of-event. The chapter also specifies volunteer training activities and summarizes basic functions required of all volunteers.

- The traffic management team likely includes stakeholder representatives involved in managing travel for a particular continuous event type for the first time. To ensure successful traffic management plan deployment, the traffic management team must adopt a formal management process and establish an interagency communication structure and protocol to support day-of-event operations.
- Other essential team management considerations involve (1) the designation of an Incident Commander for the planned special event and (2) the set up of a temporary, multi-agency command post at or near the event venue.

- Traffic management team officials should anticipate enacting modifications to the traffic management plan throughout the duration of the continuous event.
- Surveillance information and performance evaluation data define transportation operation conditions and, thus, influence decision-making at a day-of-event briefing.
- Multi-day continuous events should include: (1) a traffic management team meeting at the end of each day's activities to review the traffic management plan and team performance and/or (2) a traffic management team meeting before the start of the next event day.
- The collection and evaluation of transportation system performance data proves valuable in guiding decision-making not only on the day-of-event but also for recurring continuous events. Stakeholders can archive raw data for use in future feasibility studies, and various evaluation measures can identify specific areas that require improvement for future, similar events at the subject venue.

- The traffic management team must exercise great care in collecting performance evaluation data in order to ensure data quality and consistency.

POST-EVENT ACTIVITIES



All of the primary products of this phase (e.g., participant evaluation, post-event debriefing, and post-event report) have a high level of applicability to continuous events. Given the infrequent occurrence of continuous events coupled with the scarcity of travel forecast data, post-event activity results represent a key resource in planning for future continuous events in a region.

Table 12-5 presents a checklist of post-event activities for continuous events. The post-event activities section of this handbook provides detailed information on common techniques, special considerations, and recommended protocol that facilitate the activities listed in the table.

Table 12-5
Checklist of Post-Event Activities for Continuous Events

HANDBOOK PAGE	ACTION	APPLIES
10-2	• Review measures of effectiveness identified in event operations planning phase.	<input checked="" type="checkbox"/>
10-3	• Compile agency measures of effectiveness.	<input type="checkbox"/>
9-14	• Compile performance evaluation data.	<input type="checkbox"/>
10-5	• Conduct stakeholder participant debriefing.	<input type="checkbox"/>
10-6	• Conduct event patron survey.	<input type="checkbox"/>
10-7	• Conduct public survey.	<input type="checkbox"/>
10-7	• Conduct a post-event debriefing meeting.	<input type="checkbox"/>
10-10	• Prepare a post-event report.	<input type="checkbox"/>

Some distinguishing considerations of this event category during the post-event activities phase include:

- In regard to participant evaluation, continuous event patron travel surveys yield important information and statistics that can assist practitioners in (1) improving the accuracy of future continuous event travel forecasts and (2) developing travel demand management incentives (e.g., public transit incentives and express/charter bus services) for similar events.
- Periodic public surveys warrant consideration for special events under this category as event performance evaluation data fails to assess all community impacts. Survey results alert special event stakeholders of impacts to affected residents and businesses, in addition to non-attendee transportation system users, that may continue to occur with each successive special event at a particular venue location. As a result, stakeholders can develop and implement appropriate strategies (e.g., enforcement, etc.) to mitigate the identified impact(s) for future planned special events.
- Post-event debriefings represent a common and recommended stakeholder activity for continuous events.
 - On a regional level, such meetings may coincide with a regular traffic incident management team meeting.
 - A key aspect of a post-event debriefing for continuous events involves preparing detailed meeting minutes that include the identification of key successes and lessons learned.
 - Considering the potential significant time between similar event types, stakeholders must chronicle participant survey results and debriefing meetings so that those stakeholders charged with managing travel for fu-

ture continuous events can tap the wisdom of past participants.

- The occurrence of a major, recurring continuous event warrants development of a post-event report. In turn, the report can serve as a working document to assist in advance planning for the next (year's) event.
- A post-event report for a recurring continuous event should include an operational cost analysis to assist stakeholders in identifying potential cost-saving resource deployment strategies for the next event occurrence.

PROGRAM PLANNING



Program planning activities involve the development of policies, programs, and initiatives that facilitate improved planning and management of travel for future planned special events.

Program planning for continuous events include activities, as summarized in Table 12-6, on both a regional and local level.

Some distinguishing considerations of this event category during the program planning phase include:

- A regional transportation committee on planned special events considers the planning and resource requirements of continuous events in connection with managing all planned special events in a region. A primary committee focus concerns facilitating interagency coordination and collaboration. For instance, a task force may exist for a specific large-scale, recurring continuous event that works throughout the year to integrate past event successes and lessons learned into future event planning.

Table 12-6
Program Planning Activities for Continuous Events

PRODUCT	TOPIC	PAGE NO.
Institutional frameworks	<ul style="list-style-type: none"> • Creation of a regional transportation committee on planned special events (e.g., oversight team). 	2-15 4-2 5-3
	<ul style="list-style-type: none"> • Development of a formal planned special event permit program. 	4-10
	<ul style="list-style-type: none"> • Creation of a transportation operations task force for a recurring continuous event. 	5-3
	<ul style="list-style-type: none"> • Development of a joint operations policy. 	5-15
Policies and regulations	<ul style="list-style-type: none"> • Traffic and parking restrictions. 	5-10
	<ul style="list-style-type: none"> • Public-private towing agreements. 	5-16
Infrastructure deployment	<ul style="list-style-type: none"> • Planned alternate route for diverting background traffic around a venue. 	6-40
	<ul style="list-style-type: none"> • Portable traffic management system. 	6-56
	<ul style="list-style-type: none"> • Express, charter or shuttle bus service. 	6-32 7-11 7-12
	<ul style="list-style-type: none"> • Telephone information systems. 	7-17
	<ul style="list-style-type: none"> • Public information campaign. 	7-19

- Two or more stakeholders, representing multiple jurisdictions and/or disciplines, may establish a joint operations policy for managing travel for all planned special events in a region.
- Because continuous events occur infrequently and occasionally at temporary venues, an infrastructure needs assessment on the program planning level should focus on equipment and technology applications transferable to managing all planned special events in a region and/or day-to-day transportation system operations.
- A planned special event permit program proves particularly effective for continuous events that, because of such characteristics as event attendance and event location, may (1) conflict with municipal or state guidelines and regulations and (2) impact transportation operations and the community. The program specifies a permit process, coupled with supporting restrictions and requirements, that allows stakeholders to plan and assess all types of continuous events within a common framework. A section on program planning for local planned special events in Chapter 4 provides complete and in-depth coverage on developing a permit program applicable to continuous events.
- Funding represents a key public agency consideration for continuous events in the program planning phase.
 - Commercial events may involve event organizers and participants from outside the community hosting the event.
 - Prior to initiating event operations planning activities for a specific continuous event, stakeholders should establish a funding mechanism for recovering costs incurred in providing services during the event operations planning phase and resources on the day-of-event.
 - Funding often represents a requirement of a comprehensive planned special event permit program.

CHAPTER THIRTEEN

STREET USE EVENT



Figure 13-1
Street Use Event: New York City Cycling Championship

PURPOSE

In order to assist the user in planning for a particular planned special event, this chapter describes an advance planning and travel management process and considerations specific to a *street use event*. It summarizes recommended policies, guidelines, procedures, and resource applications that were previously discussed in the first ten chapters of this technical reference. This chapter presents these guidelines and procedures in tables, flowcharts, and checklists that can be followed to help guide the user through all the stages of a planned special event of this category for a particular locale. Although Chapter 3 presents all the steps necessary to manage travel for a planned special event,

this chapter provides a roadmap to help guide the user through all five phases of managing travel for planned special events, identifying issues, analysis, and products applicable to street use events. To further guide readers, this chapter specifies references to special considerations and best practices relating to this event category.

INTRODUCTION

In order to guide the user, this chapter addresses four key topics, corresponding to five phases of managing travel for planned special events, including: (1) *event operations planning*, (2) *implementation and day-of-event activities*, (3) *post-event activities*, and (4) *program planning*. In planning for

all planned special events in a region, the final section on program planning highlights issues to consider that evolve from and/or pertain to street use events. By following each one of the steps and procedures, the user will have identified and covered all the significant aspects that are necessary to result in successful management of travel for a planned special event with characteristics specific to a street use event.

A street use event occurs on a street requiring temporary closure. Table 13-1 indicates different types of planned special events classified as a street use event. This category includes events that occur in rural, urban, and metropolitan areas. Street use events generally occur in a city or downtown central business district; however, race events, motorcycle rallies, and dignitary motorcades may necessitate temporary closure of arterial streets or, to accommodate a motorcade, limited-access highways. Planned special event permitting guidelines and restrictions typically (1) influence event operations characteristics (e.g., location, street use event route, time of occurrence, etc.) and (2) govern whether a traffic management plan can mitigate the transportation impact of a particular street use event. Table 13-2 lists key characteristics of a street use event.

Table 13-1
Types of Street Use Events

EVENT TYPE
<ul style="list-style-type: none"> • Parades • Marathons • Bicycle races • Grand Prix auto races • Motorcycle rallies • Dignitary motorcades

Table 13-2
Distinguishing Operating Characteristics of a Street Use Event

CHARACTERISTIC
<ul style="list-style-type: none"> • Occurrence on a roadway requiring temporary closure • Specific starting and predictable ending times • Capacity of spectator viewing area not known • Spectators not charged or ticketed • Dedicated parking facilities not available

Special Considerations

In light of the characteristics of a street use event, special considerations when planning such an event include:

- Daily attendance, a key input in the travel forecast analysis process, is often difficult to estimate, and day-of-event weather conditions significantly affect it.
- The entire parade or race route represents the event venue.
- Parking areas and traffic flow routes serve an expanded site area.
- Race events or motorcycle rallies often require the temporary closure of roadways over a significant distance.
- Spectator viewing areas may have limited access to transit stations and adjacent high-capacity arterial roadways and freeways.
- High attendance events in downtown areas require extensive planning for parking and travel demand management.
- Major street use events typically generate trips from a multi-county region.
- These events impact parking and access required by nearby neighborhood residents and businesses.
- Temporary road closures, required to stage the event, impact background traffic and transit flow in addition to emergency vehicle access and other local services.

EVENT OPERATIONS PLANNING



Since street use events take place on the roadway system and different event types have contrasting characteristics (e.g., parades versus road races), the event planning team should develop: (1) a feasibility study, (2) a traffic management plan, and (3) travel demand management initiatives (as necessary) in the event operations planning phase. The stakeholder composition of an event planning team varies by event, as most parades represent community events while road races and motorcycle rallies may involve commercial dealings. In regard to a community-sponsored special event, transportation and/or law enforcement agencies usually bear the responsibility of developing all of the necessary event planning phase products. These stakeholders guide the planning process for commercial street use events as well. Jurisdictions may mandate that private event organizers use a standard route and adhere to numerous guidelines and regulations (e.g., see the street use event checklist contained in Appendix A) developed by public agencies, in the program planning phase, as part of a greater permit program for all planned special events.

Recurring street use events, such as an annual holiday parade, allow stakeholders to reference a past feasibility study and traffic management plan, coupled with operations successes and lessons learned, when conducting advance planning activities for a future event. However, due to the significant time between recurring street use events, the event planning team must anticipate (1) changes in the operations characteristics of a future event, (2) modifications to the transportation system serving the event, and (3) changes in the community (e.g., land use, socioeconomic, regulations, etc.).

Figure 13-2 presents 31 steps in the event operations planning process for all planned special events. The flowchart covers development and integration of the phase's aforementioned three products. Table 13-3 complements the flowchart by providing step-by-step guidance on issues and recommended analyses for a street use event. The table also presents reference information contained in this handbook that is specific to street use events. While all of the major handbook topics under event operations planning apply to a street use event, Table 13-3 indicates planning considerations and agency example applications (e.g., via narratives or photos) within the context of this event category. In turn, practitioners can use example applications presented for a street use event to manage travel for other categories of planned special events.

The flowchart in Figure 13-2 represents a suggested order of event operations planning activities. However, as noted below, the event planning team can modify activities to create a dynamic and more effective planning process tailored to the scope of a specific planned special event:

- A jurisdiction planned special event permit process and requirements will scope, schedule, and direct event operations planning activities for street use events.
- The event planning team should plan an event route, spectator traffic flow routes, and background traffic accommodation strategies early in the event operations planning phase, referencing guidelines and tactics for developing a traffic flow plan (Steps 11 through 16).
- Links between process steps are two-way as stakeholders evaluate alternative strategies and/or integrate traffic management plan components.

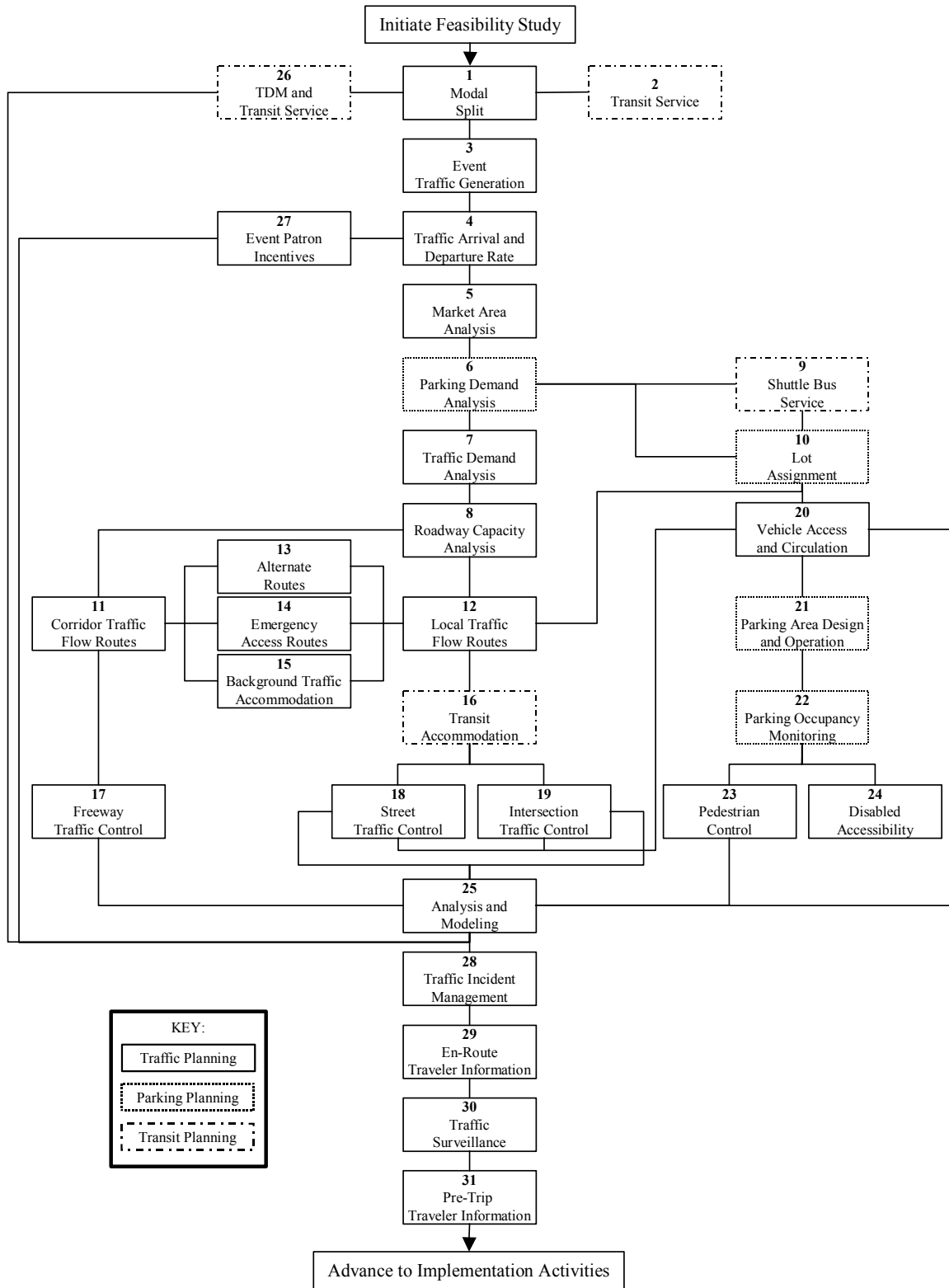


Figure 13-2
Event Operations Planning Process Flowchart

Table 13-3
Event Operations Planning Steps
Street Use Event

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
1	5-20			
2	7-9			
3	5-21	<ul style="list-style-type: none"> Impact of weather on attendance. Difficult to estimate attendance. Lack of historical traffic generation data. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Estimating attendance. 	5-22
4	5-22	<ul style="list-style-type: none"> Impact of weather on time of arrival and/or departure. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Using historical data to estimate traffic arrival rate. 	5-24
5	5-25	<ul style="list-style-type: none"> Use of travel time or distance analysis. Market area includes the community or region the event is staged for. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Recommended market area analysis methodology. 	5-25
			<ul style="list-style-type: none"> <i>Special consideration:</i> Market area analysis. 	5-25
6	5-27	<ul style="list-style-type: none"> Low turnover during event. Exclusive use of off-site parking areas. Self-parking. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Parking demand analysis. 	5-27
7	5-29	<ul style="list-style-type: none"> Requirement of road closures to stage the event. Utility (e.g., attractiveness) of individual parking areas vary. 		
8	5-30	<ul style="list-style-type: none"> Use of computer traffic simulation model to measure the full impact of road closures on operations across a network of streets. 		
9	6-32	<ul style="list-style-type: none"> Design of service to expand and contract (e.g., number of buses operating) based on event patron arrival/departure rates throughout the day-of-event. 		
10	6-13			
11	6-38			
12	6-38		<ul style="list-style-type: none"> <i>Special consideration:</i> Road closure impact checklist; Table 6-22 	6-38
			<ul style="list-style-type: none"> <i>Special consideration:</i> Parade staging area; Figure 6-29 	6-38
13	6-40	<ul style="list-style-type: none"> Consideration for road closures required to stage the event. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Personnel resources for alternate route plan deployment; Figure 6-33. 	6-43
14	6-41	<ul style="list-style-type: none"> Ambulances or first-aid stations staged at various locations for a street race. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Emergency access lanes. 	6-43
15	6-43	<ul style="list-style-type: none"> Key consideration for this event category. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Pre-trip traveler information; Table 6-27. 	6-45
16	6-45			
17	6-49		<ul style="list-style-type: none"> <i>Example:</i> Appendix K – Street control plan and equipment location plan. 	6-59
18	6-51		<ul style="list-style-type: none"> <i>Example:</i> Appendix K – Street control plan and equipment location plan. 	6-59
19	6-57		<ul style="list-style-type: none"> <i>Special consideration:</i> Intersection traffic control along the event route. 	6-58
			<ul style="list-style-type: none"> <i>Example:</i> Appendix K – Street control plan and equipment location plan. 	6-59
20	6-16	<ul style="list-style-type: none"> Circulation problems due to lack of dedicated parking facilities. 		
21	6-20	<ul style="list-style-type: none"> Consideration only for privately operated parking areas. 		
22	6-23	<ul style="list-style-type: none"> Coordination with private parking area operators. 		
23	6-28	<ul style="list-style-type: none"> High volume of pedestrian traffic and continuous circulation around the venue perimeter. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Pedestrian traffic. 	6-27
24	6-32	<ul style="list-style-type: none"> Strong consideration for this event category. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Disabled parking spaces. 	6-32
25	6-9	<ul style="list-style-type: none"> Consideration of detailed analysis (e.g., tabletop exercises) and modeling. 		

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
26	7-2 to 7-14	<ul style="list-style-type: none"> High applicability of bicyclist accommodation, public transit incentives, and event/charter bus service to this event category. Applicability of local travel demand management to downtown events. 		
27	7-6	<ul style="list-style-type: none"> Particularly applicable to managing event departure rate. 		
28	6-72			
29	6-61	<ul style="list-style-type: none"> Emphasis on portable closed-circuit television, field observation, and/or aerial observation. 		
30	6-70			
31	7-14	<ul style="list-style-type: none"> Key step for infrequent events. 		

- The event planning team can develop different traffic management plan components concurrently.

The event operations planning process references information and concepts contained in the advance planning section of this handbook, and it directs the user to recommended guidelines, procedures, strategies, and resource applications for managing travel for a specific planned special event. When following the process, practitioners should review:

- Important advance planning considerations and external factors, summarized in Chapter 5, that influence planning activities. For instance, effective and rapid stakeholder review of event operations planning products requires: (1) an annotated planning timeline, (2) a review process, and (3) performance standards. Under risk assessment, scenarios relating to unplanned demonstrations or event patron violence may warrant consideration for a particular special event if law enforcement intelligence reports indicate such potential.
- Section on “Special Considerations” in Chapter 6 with regard to controlling traffic during a dignitary motorcade.
- Traffic management plan components in Chapter 6 that provide an overview of various principles driving plan develop-

ment in addition to a contingency plan checklist.

IMPLEMENTATION AND DAY-OF-EVENT ACTIVITIES

Implementation activities represent an essential phase in advance planning for street use events. The traffic management team may involve new interagency relationships, and it requires an event-specific implementation plan to communicate specifics of the new traffic management plan prepared by the event planning team. Because particular street use event types occur infrequently, stakeholder simulation exercises prove valuable in assisting traffic management team personnel understand the roles and responsibilities of participating stakeholders in addition to the actions taken on the day-of-event. Equipment testing marks another key consideration as day-of-event operations at and in the vicinity of the event site usually depend on portable equipment for traffic control, surveillance, and dissemination of en-route traveler information. These intensive stakeholder activities reflect the typical unfamiliarity with managing travel for a street use event coupled with the fact that transportation management activities, on the order required for a planned special event,

may not regularly take place in the vicinity of the event site.

Table 13-4 presents a checklist of implementation and day-of-event activities for stakeholders to consider regarding any street use event. As indicated in the table, the event planning team must determine, based on various event operations characteristics (e.g., event type, event location, event time of occurrence, attendance, market area, etc.) and other external factors, what unique set of activities apply in handling a specific special event. The table facilitates fast access to handbook sections providing detailed guidance, including recommended strategies, protocol, and resource applications, required by users to plan and execute these activities.

Some distinguishing considerations of this event category during the day-of-event activities phase include:

- Street use events demand the use of experienced personnel in the field on the

day-of-event. Law enforcement officers or other personnel properly trained in traffic control should (1) direct traffic at intersections adjacent to closed streets and (2) control pedestrian crossing locations.

- Supplementing traffic management team personnel with temporary staff and volunteers may represent a necessary action to meet staffing requirements. Competent adult volunteers can monitor barricade placement and minor intersection/driveway approaches. Many volunteers have no past experience in tasks associated with traffic and pedestrian control and parking operations. As a result, volunteer training becomes paramount to the success of day-of-event operations. Chapter 8 contains checklists and relevant considerations for assessing personnel resource needs and using volunteers on the day-of-event. The chapter also specifies volunteer training activities and summarizes basic functions required of all volunteers.

Table 13-4
 Checklist of Implementation and Day-of-Event Activities for Street Use Events

HANDBOOK PAGE	ACTION	APPLIES
8-2	• Develop an implementation plan.	<input checked="" type="checkbox"/>
8-6	• Conduct a stakeholder simulation exercise(s).	<input type="checkbox"/>
8-8	• Test equipment resources slated for use on the day-of-event.	<input type="checkbox"/>
8-9	• Recruit and train volunteers to fulfill personnel resource needs.	<input type="checkbox"/>
9-2	• Implement a traffic management team management process.	<input type="checkbox"/>
9-4	• Designate a multi-agency command post.	<input type="checkbox"/>
9-6	• Conduct a traffic management plan evaluation(s) during the day-of-event.	<input type="checkbox"/>
9-6	• Establish protocol for traffic management team officials to consider and implement changes to the traffic management plan to accommodate real-time traffic conditions.	<input type="checkbox"/>
9-8	• Establish interagency communication protocol.	<input type="checkbox"/>
9-9	• Review communication equipment compatibility.	<input type="checkbox"/>
9-10	• Use the media to communicate with event patrons and other transportation users.	<input type="checkbox"/>
9-12	• Perform traffic monitoring on the day-of-event.	<input type="checkbox"/>

- The traffic management team likely includes stakeholder representatives involved in managing travel for a particular street use event type for the first time. To ensure successful traffic management plan deployment, the traffic management team must adopt a formal management process and establish an interagency communication structure and protocol to support day-of-event operations.
- Other essential team management considerations involve (1) the designation of an Incident Commander for the planned special event and (2) the set up of a temporary, multi-agency command post at or near the event site.
- Traffic management team officials should anticipate enacting modifications to the traffic management plan during the street use event.
- Surveillance information and performance evaluation data define transportation operation conditions and, thus, influence decision-making at a day-of-event briefing.
- Due to the challenge of estimating event-generated traffic in the event feasibility study, day-of-event briefings should occur at frequent intervals during event ingress operations. Moreover, traffic management team officials should conduct an expanded briefing prior to the end of the event in order to reassess the traffic management and implementation plan for egress operations, taking into consideration traffic and pedestrian demand observed during ingress in addition to traffic and transit operations on alternate routes.
- The collection and evaluation of transportation system performance data proves valuable in guiding decision-making not only on the day-of-event but also for recurring street use events (e.g., annual parades or street races). Stakeholders can archive raw data for use in

future feasibility studies, and various evaluation measures can identify specific areas that require improvement for future, similar events using the same route.

- The traffic management team must exercise great care in collecting performance evaluation data in order to ensure data quality and consistency.

POST-EVENT ACTIVITIES

All of the primary products of this phase, particularly participant evaluations and post-event debriefings, apply to evaluating transportation operations for street use events. Given the infrequent occurrence of street use events coupled with the scarcity of travel forecast data, post-event activity results represent a key resource in planning for future street use events in a region.

Table 13-5 presents a checklist of post-event activities for street use events. The post-event activities section of this handbook provides detailed information on common techniques, special considerations, and recommended protocol that facilitate the activities listed in the table.

Some distinguishing considerations of this event category during the post-event activities phase include:

- In regard to participant evaluation, street use event patron travel surveys yield important information and statistics that can assist practitioners in (1) improving the accuracy of future street use event travel forecasts and (2) developing travel demand management incentives (e.g., public transit incentives and express/charter bus services) for similar events.

Table 13-5
 Checklist of Post-Event Activities for Street Use Events

HANDBOOK PAGE	ACTION	APPLIES
10-2	• Review measures of effectiveness identified in event operations planning phase.	<input type="checkbox"/>
10-3	• Compile agency measures of effectiveness.	<input type="checkbox"/>
9-14	• Compile performance evaluation data.	<input type="checkbox"/>
10-5	• Conduct stakeholder participant debriefing.	<input type="checkbox"/>
10-6	• Conduct event patron survey.	<input type="checkbox"/>
10-7	• Conduct public survey.	<input type="checkbox"/>
10-7	• Conduct a post-event debriefing meeting.	<input type="checkbox"/>
10-10	• Prepare a post-event report.	<input type="checkbox"/>

- Periodic public surveys warrant consideration for special events under this category as event performance evaluation data fails to assess all community impacts. Survey results alert special event stakeholders of impacts to affected residents and businesses, in addition to non-attendee transportation system users, that may continue to occur with each successive special event on a particular route. As a result, stakeholders can develop and implement appropriate strategies (e.g., create/revise a standard street use event route, revise alternate route plans, etc.) and regulations to mitigate the identified impact(s) for future planned special events.
- Post-event debriefings represent a common and recommended stakeholder activity for street use events.
 - On a regional level, such meetings may coincide with a regular traffic incident management team meeting.
 - A key aspect of a post-event debriefing for street use events involves preparing detailed meeting minutes that include the identification of key successes and lessons learned. In turn, findings may refine special event permit program provisions for future street use events.
 - Considering the potential significant time between similar event types, stakeholders must chronicle participant survey results and debriefing meetings so that those stakeholders charged with managing travel for future street use events can tap the wisdom of past participants.
- The occurrence of a major, recurring street use event warrants development or update of a post-event report. In turn, the report can serve as a working document to assist in advance planning for the next (year's) event.
- A post-event report for a recurring street use event should include an operational cost analysis to assist stakeholders in identifying potential cost-saving resource deployment strategies for the next event occurrence.

PROGRAM PLANNING



Program planning activities involve the development of policies, programs, and initiatives that facilitate improved planning and management of travel for future planned special events.

Program planning for street use events include activities, as summarized in Table 13-6, on both a regional and local level.

Some distinguishing considerations of this event category during the program planning phase include:

- A regional transportation committee on planned special events considers the planning and resource requirements of street use events in connection with managing all planned special events in a region. A primary committee focus concerns facilitating interagency coordination and collaboration. For instance, a task force may exist for a specific large-scale, recurring street use event that works throughout the year to integrate past event successes and lessons learned into future event planning.
- Two or more stakeholders, representing multiple jurisdictions and/or disciplines, may establish a joint operations policy for managing travel for all planned special events in a region.
- Stakeholders may develop a standard route for all street use events of a certain type (e.g., parades, street races, etc.) that occur within a region or jurisdiction in order to create a more efficient event operations planning process for future street use events.
- Because street use events occur infrequently and on the roadway system, an infrastructure needs assessment on the program planning level should focus on equipment and technology applications transferable to managing all planned special events in a region and/or day-to-day transportation system operations.

Table 13-6
Program Planning Activities for Street Use Events

PRODUCT	TOPIC	PAGE NO.
Institutional frameworks	• Creation of a regional transportation committee on planned special events (e.g., oversight team).	2-15 4-2 5-3
	• Development of a formal planned special event permit program.	4-10
	• Creation of a transportation operations task force for a recurring street use event.	5-3
	• Development of a joint operations policy.	5-15
Policies and regulations	• Traffic and parking restrictions.	5-10
	• Standard street use event routes.	5-15
	• Public-private towing agreements.	5-16
Infrastructure deployment	• Planned alternate route for diverting background traffic around a venue.	6-40
	• Portable traffic management system.	6-56
	• Express, charter or shuttle bus service.	6-32
		7-11
		7-12
	• Telephone information systems.	7-17
• Public information campaign.	7-19	

- A planned special event permit program proves particularly effective for street use events that, because of such characteristics as event attendance, event time of occurrence, and event location (e.g., route), may (1) conflict with municipal or state guidelines and regulations and (2) impact transportation operations and the community. The program specifies a permit process, coupled with supporting restrictions and requirements, that allows stakeholders to plan and assess all types of street use events within a common framework. For instance, stakeholder review of a proposed event route represents one step in the permit process in addition to a key decision criteria for rendering permit application approval. A section on program planning for local planned special events in Chapter 4 provides complete and in-depth coverage on developing a permit program applicable to street use events.
- Funding represents a key public agency consideration for street use events in the program planning phase.
 - Commercial events may involve event organizers and participants from outside the community hosting the event.
 - Prior to initiating event operations planning activities for a specific street use event, stakeholders should establish a funding mechanism for recovering costs incurred in providing services during the event operations planning phase and resources (e.g., namely personnel for traffic control) on the day-of-event.
 - Funding often represents a requirement of a comprehensive planned special event permit program.

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CHAPTER FOURTEEN

REGIONAL/MULTI-VENUE EVENT



Figure 14-1

Regional/Multi-Venue Event: Bradley Center, U.S. Cellular Arena, and Midwest Airlines Center (convention center) Adjacent to 4th Street in Milwaukee, WI

PURPOSE

In order to assist the user in planning for a particular planned special event, this chapter describes an advance planning and travel management process and considerations specific to a *regional/multi-venue event*. It summarizes recommended policies, guidelines, procedures, and resource applications that were previously discussed in the first ten chapters of this technical reference. This chapter presents these guidelines and procedures in tables, flowcharts, and checklists that can be followed to help guide the user through all the stages of a planned special event of this category for a particular locale. Although Chapter 3 presents all the steps

necessary to manage travel for a planned special event, this chapter provides a roadmap to help guide the user through all five phases of managing travel for planned special events, identifying issues, analysis, and products applicable to regional/multi-venue events. To further guide readers, this chapter specifies references to special considerations and best practices relating to this event category.

INTRODUCTION

In order to guide the user, this chapter addresses four key topics, corresponding to five phases of managing travel for planned special events, including: (1) *event opera-*

tions planning, (2) implementation and day-of-event activities, (3) post-event activities, and (4) program planning. In planning for all planned special events in a region, the final section on program planning highlights issues to consider that evolve from and/or pertain to regional/multi-venue events. By following each one of the steps and procedures, the user will have identified and covered all the significant aspects that are necessary to result in successful management of travel for a planned special event with characteristics specific to a regional/multi-venue event.

A regional/multi-venue event refers to multiple planned special events that occur within a region at or near the same time. Individual events may differ by classification category. Table 14-1 indicates different types of planned special events classified as a regional/multi-venue event. Concurrent planned special events require consideration as a regional/multi-venue event if traffic generated by different, competing special events use the same traffic flow routes (e.g., freeway/arterial corridors, local streets) or parking areas over the same time frame. As a result, stakeholders involved in planning and managing individual special events must, as a group, forecast and mitigate the global impact of concurrent special events on transportation system operations. Table 14-2 lists key characteristics of a regional/multi-venue event.

Table 14-1
Types of Regional/Multi-Venue Events

EVENT TYPE
<ul style="list-style-type: none"> • Occurrence of a single-theme event requiring multiple venues to stage the event • Occurrence of a downtown parade or festival in the vicinity of a downtown fixed venue also hosting a special event • Occurrence of special events at two fixed venues in a region at or near the same time

Table 14-2
Distinguishing Operating Characteristics of a Regional/Multi-Venue Event

CHARACTERISTIC
<ul style="list-style-type: none"> • Occurrence of events at multiple venues and at or near the same time • Events having a time specific duration, a continuous duration, or both • Overall capacity generally not known if continuous events or street use events are involved

Special Considerations

In light of the characteristics of a regional/multi-venue event, special considerations when planning such an event include:

- Traffic flow routes to/from different events may use the same road segments, and predominant traffic demand occurs in the same or opposite directions.
- Traffic flow routes that serve different special event venues may intersect.
- Overflow parking areas typically reserved for a recurring special event or permanent venue may be required to accommodate demand from nearby concurrent events.
- Ingress and egress operations for concurrent events may occur at the same time.
- Event patrons and participants may travel from one planned special event to another.
- Traffic control and traveler information for different special events can confuse event patrons.

EVENT OPERATIONS PLANNING



Planned regional/multi-venue events include, for example, multi-day sporting games (e.g., Olympic style) that require multiple venues to stage various events and major fireworks displays in areas offering

several vantage points (e.g., parks, etc.) spread out over a large area. Other regional/multi-venue events evolve as a result of individual planned special events slated to occur within a region at or near the same time. These events involve any combination of discrete/recurring events at a permanent venue, continuous events, and street use events. As a result, the collective regional/multi-venue event often represents a one-time occurrence, particularly if one or more individual events involve a sporting or concert event. Concurrent events may span one day or multiple days.

The scope and infrequent occurrence of a regional/multi-venue event generally requires the event planning team(s) to develop: (1) a feasibility study, (2) a traffic management plan, and (3) travel demand management initiatives (as necessary) in the event operations planning phase. The overall event operations planning approach for a regional/multi-venue event remains the same for all event types. That is, the event planning team should first develop preliminary event operations products on a venue-by-venue basis and then combine and evaluate venue-specific findings and recommended mitigation actions for the regional/multi-venue event. The latter step helps to determine: (1) additional transportation system capacity constraints not identified in individual event/venue analyses, (2) potential conflicts in event/venue traffic management plan provisions, and (3) additional mitigation measures designed to improve transportation operations for the overall regional/multi-venue event.

A regional/multi-venue event places an emphasis on interagency coordination and collaboration. Each venue event may involve a distinct group of planning and operations stakeholders if individual events within a region do not relate to each other. Event

operations planning for a regional/multi-venue event requires input and participation by all involved stakeholder groups. Public agency stakeholders responsible for the planning or approval of individual venue events should facilitate interaction between event planning teams and ensure mitigation of transportation and community impacts from the composite regional/multi-venue event.

Figure 14-2 presents 31 steps in the event operations planning process for all planned special events. The flowchart covers development and integration of the phase's aforementioned three products. Table 14-3 complements the flowchart by providing step-by-step guidance on issues and recommended analyses for a regional/multi-venue event. The table also presents reference information contained in this handbook that is specific to regional/multi-venue events. While all of the major handbook topics under event operations planning apply to a regional/multi-venue event, Table 14-3 indicates planning considerations and agency example applications (e.g., via narratives or figures) within the context of this event category. In turn, practitioners can use example applications presented for a regional/multi-venue event to manage travel for other categories of planned special events.

The flowchart in Figure 14-2 represents a suggested order of event operations planning activities. However, as noted below, the event planning team can modify activities to create a dynamic and more effective planning process tailored to the scope of a specific planned special event:

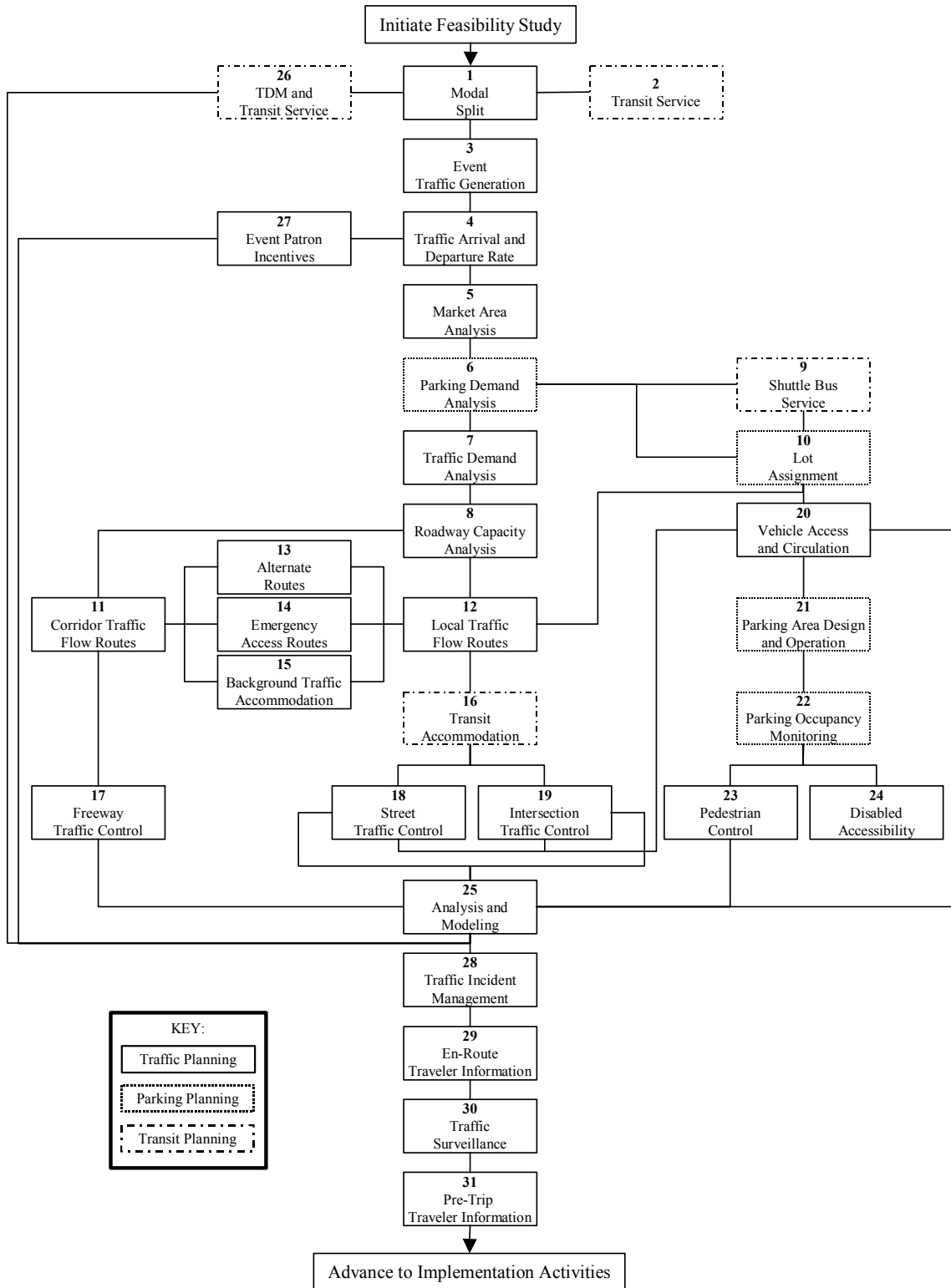


Figure 14-2
Event Operations Planning Process Flowchart

Table 14-3
Event Operations Planning Steps
Regional/Multi-Venue Event

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
1	5-20	<ul style="list-style-type: none"> Performance of step for each individual event. 		
2	7-9	<ul style="list-style-type: none"> Potential financial incentive for transit service to expand service or provide express/charter service. 		
3	5-21	<ul style="list-style-type: none"> Performance of step for each individual event. 		
4	5-22	<ul style="list-style-type: none"> Performance of step for each individual event. 		
5	5-25	<ul style="list-style-type: none"> Performance of step for each individual event. 		
6	5-27	<ul style="list-style-type: none"> Variable demand rates from different events. Staggering of event times creates continuous turnover over the course of the day-of-event. 	<ul style="list-style-type: none"> <i>Special consideration:</i> Parking demand analysis. 	5-27
			<ul style="list-style-type: none"> <i>Special consideration:</i> Shared parking operation. 	5-27
			<ul style="list-style-type: none"> <i>Example:</i> Parking occupancy summary; Table 5-17. 	5-29
7	5-29	<ul style="list-style-type: none"> Performance of step for each individual event. 	<ul style="list-style-type: none"> <i>Example:</i> Preliminary road segment capacity analysis; Figure 5-13. 	5-30
8	5-30	<ul style="list-style-type: none"> Analysis of multiple time periods. 		
9	6-32	<ul style="list-style-type: none"> Design of service specific to individual parking areas or events. 		
		<ul style="list-style-type: none"> Establish service, as necessary, to accommodate satellite parking areas (e.g., event patron and employee parking), transit stations, and event participants (e.g., to/from area hotels). 		
10	6-13	<ul style="list-style-type: none"> Conflict concerning multiple events using one lot. 		
11	6-38			
12	6-38	<ul style="list-style-type: none"> Multiple events using the same traffic flow route. 		
13	6-40			
14	6-41	<ul style="list-style-type: none"> Evaluation of needs for each individual event. 		
15	6-43	<ul style="list-style-type: none"> Key consideration if road closures are required to stage an event(s). 		
16	6-45			
17	6-49			
18	6-51			
19	6-57			
20	6-16	<ul style="list-style-type: none"> Circulation conflicts caused by multiple events in the same area. 		
21	6-20			
22	6-23	<ul style="list-style-type: none"> Circulation conflicts caused by multiple events in the same area. 	<ul style="list-style-type: none"> <i>Example:</i> Parking occupancy monitoring plan; Table 6-11. 	6-24
23	6-28	<ul style="list-style-type: none"> Consideration of pedestrian access routes that connect different venues. 		
24	6-32			
25	6-9	<ul style="list-style-type: none"> Consideration of detailed analysis (e.g., tabletop exercises) and modeling. 		
26	7-2 to 7-14	<ul style="list-style-type: none"> High applicability of all travel demand management initiatives to this event category. 	<ul style="list-style-type: none"> <i>Example:</i> Local travel demand management techniques. 	7-8
			<ul style="list-style-type: none"> <i>Example:</i> Express bus service. 	7-11
27	7-6	<ul style="list-style-type: none"> Performance of step for each individual event. 	<ul style="list-style-type: none"> <i>Example:</i> Event patron incentives; Figure 7-5. 	7-7
28	6-72	<ul style="list-style-type: none"> Key consideration for freeway corridors within a region. 	<ul style="list-style-type: none"> <i>Example:</i> Traffic incident quick clearance strategies; Table 6-40. 	6-75
29	6-61			
30	6-70			
31	7-14	<ul style="list-style-type: none"> Key step for infrequent events. 	<ul style="list-style-type: none"> <i>Example:</i> Dissemination of pre-trip traveler information via the Internet. 	7-17
			<ul style="list-style-type: none"> <i>Example:</i> Use of 511 service for a planned special event. 	7-18

- The event planning team should repeat process steps, as indicated in Table 14-3, for individual venue events comprising the regional/multi-venue event.
- Final planning products should account for the overall impact of the regional/multi-venue event.
- Links between process steps are two-way as stakeholders evaluate alternative strategies and/or integrate traffic management plan components.
- The event planning team can develop different traffic management plan components concurrently.

The event operations planning process references information and concepts contained in the advance planning section of this handbook, and it directs the user to recommended guidelines, procedures, strategies, and resource applications for managing travel for a specific planned special event. When following the process, practitioners should review:

- Advance planning and travel management process and considerations provided in Chapters 11 through 13, as appropriate, for individual venue events comprising the regional/multi-venue event.
- Important advance planning considerations and external factors, summarized in Chapter 5, that influence planning activities.
- Section on “Special Considerations” in Chapter 6 with regard to transporting dignitaries and event participants.
- Traffic management plan components in Chapter 6 that provide an overview of various principles driving plan development in addition to a contingency plan checklist.

IMPLEMENTATION AND DAY-OF-EVENT ACTIVITIES

Implementation activities represent an essential phase in advance planning for regional/multi-venue events. Depending on event type, one traffic management team may handle day-of-event operations for multiple venues (e.g., sporting games) or a single venue. Nonetheless, implementation plans for individual event venues must correlate in terms of traffic control strategies deployed and resources used. Such specifications can be organized through matrices for easy reference.

Because regional/multi-venue events occur infrequently, stakeholder simulation exercises prove valuable in assisting traffic management team supervisors and field personnel understand the roles and responsibilities of participating stakeholders in addition to the operations game plan and actions for individual venue events. Tabletop exercises allow traffic management team officials to review the impact of certain event-specific action plans on other concurrent events. A full-scale simulation proves advantageous by providing venue managers and transportation operators, stationed at various command posts (e.g., on-site and at the transportation management center), with the opportunity to test the communications infrastructure used on the day-of-event. These intensive stakeholder activities reflect the typical unfamiliarity with managing travel for a regional/multi-venue event coupled with the fact that transportation management activities usually performed for a particular, recurring special event may require modification to accommodate nearby concurrent planned special events.

Table 14-4 presents a checklist of implementation and day-of-event activities for stakeholders to consider regarding any regional/multi-venue event. The event planning team must determine, based on various event operations characteristics (e.g., event type, event location, event time of occurrence, attendance, market area, etc.) and other external factors, what unique set of activities apply in handling all venue events comprising a regional/multi-venue special event. In turn, stakeholders should review the special considerations and recommended activities presented in Chapters 11 through 13 for pertinent individual special events. The table facilitates fast access to handbook sections providing detailed guidance, including recommended strategies, protocol, and resource applications, required by users to plan and execute these activities.

Some distinguishing considerations of this

event category during the day-of-event activities phase include:

- The scope of regional/multi-venue events demand a significant level of personnel resources. Supplementing traffic management team personnel with temporary staff and volunteers may represent a necessary action to meet staffing requirements for all concurrent special events. Many volunteers have no past experience in tasks associated with traffic and pedestrian control and parking operations. As a result, volunteer training becomes paramount to the success of day-of-event operations. Chapter 8 contains checklists and relevant considerations for assessing personnel resource needs and using volunteers on the day-of-event. The chapter also specifies volunteer training activities and summarizes basic functions required of all volunteers.

Table 14-4
 Checklist of Implementation and Day-of-Event Activities for Regional/Multi-Venue Events

HANDBOOK PAGE	ACTION	APPLIES
8-2	• Develop an implementation plan.	<input checked="" type="checkbox"/>
8-6	• Conduct a stakeholder simulation exercise(s).	<input type="checkbox"/>
8-8	• Test equipment resources slated for use on the day-of-event.	<input type="checkbox"/>
8-9	• Recruit and train volunteers to fulfill personnel resource needs.	<input type="checkbox"/>
9-2	• Implement a traffic management team management process.	<input type="checkbox"/>
9-4	• Designate a multi-agency command post.	<input type="checkbox"/>
9-6	• Conduct a traffic management plan evaluation(s) during the day-of-event.	<input type="checkbox"/>
9-6	• Establish protocol for traffic management team officials to consider and implement changes to the traffic management plan to accommodate real-time traffic conditions.	<input type="checkbox"/>
9-8	• Establish interagency communication protocol.	<input type="checkbox"/>
9-9	• Review communication equipment compatibility.	<input type="checkbox"/>
9-10	• Use the media to communicate with event patrons and other transportation users.	<input type="checkbox"/>
9-12	• Perform traffic monitoring on the day-of-event.	<input type="checkbox"/>

- Multi-venue events may strain available stakeholder resources needed to manage travel in the vicinity of a particular event venue; therefore, traffic management team officials should reconfirm the availability of necessary traffic control and communications equipment prior to the day-of-event.
- To ensure successful traffic management plan deployment and coordination across all venue locations, the traffic management team(s) must establish an inter-agency communication structure and protocol to support regional/multi-venue event operations on the day-of-event.
- Other essential team management considerations involve the set up of a command post, most likely at a regional transportation management center, for monitoring and managing all venue events.
- Traffic management team officials should anticipate enacting modifications to the traffic management plan(s) during the regional/multi-venue event.
- Surveillance information and performance evaluation data define transportation operation conditions and, thus, in-

fluence decision-making at a day-of-event briefing.

- Day-of-event briefings should occur at key breakpoints, such as at the end of ingress/egress operations for a particular venue event, during a regional/multi-venue event. This allows traffic management team officials to reassess the traffic management and implementation plan for all concurrent events and make revisions as necessary.

POST-EVENT ACTIVITIES



Table 14-5 presents a checklist of post-event activities for regional/multi-venue events. The post-event activities section of this handbook provides detailed information on common techniques, special considerations, and recommended protocol that facilitate the activities listed in the table.

Some distinguishing considerations of this event category during the post-event activities phase include:

Table 14-5
Checklist of Post-Event Activities for Regional/Multi-Venue Events

HANDBOOK PAGE	ACTION	APPLIES <input checked="" type="checkbox"/>
10-2	• Review measures of effectiveness identified in event operations planning phase.	<input type="checkbox"/>
10-3	• Compile agency measures of effectiveness.	<input type="checkbox"/>
9-14	• Compile performance evaluation data.	<input type="checkbox"/>
10-5	• Conduct stakeholder participant debriefing.	<input type="checkbox"/>
10-6	• Conduct event patron survey.	<input type="checkbox"/>
10-7	• Conduct public survey.	<input type="checkbox"/>
10-7	• Conduct a post-event debriefing meeting.	<input type="checkbox"/>
10-10	• Prepare a post-event report.	<input type="checkbox"/>

- With regard to regional/multi-venue events consisting of individual non-related venue events occurring at or near the same time, stakeholders may conduct post-event activities specific to individual events.
- Practitioners should reference the post-event activities guidelines and considerations contained in Chapters 11 through 13, as appropriate, for individual venue events comprising the regional/multi-venue event.
- Post-event debriefings represent a common and recommended stakeholder activity for all regional/multi-venue events.
 - On a regional level, such meetings may coincide with a regular traffic incident management team meeting.
 - The meeting agenda should include discussion topics on the planning process, interagency communication, and coordination of travel management activities among individual venue events on the day-of-event.
 - A key aspect of a post-event debriefing for regional/multi-venue events involves preparing detailed meeting minutes that include the identification of key successes and lessons learned.
 - Considering the potential significant time between regional/multi-venue events, stakeholders must chronicle debriefing meetings so that those stakeholders charged with managing travel for future events can tap the wisdom of past participants.
- The occurrence of a major, single-theme regional/multi-venue event warrants participant evaluations and the development of a post-event report. Given the infrequent occurrence of this event type, post-event activity results represent a key resource in planning for the next

event occurrence either in the host region or another locale (e.g., for roving regional/multi-venue events).

PROGRAM PLANNING



Program planning activities involve the development of policies, programs, and initiatives that facilitate improved planning and management of travel for future planned special events.

Program planning for regional/multi-venue events include activities, as summarized in Table 14-6, aimed at facilitating interagency coordination both during the event operations planning phase and on the day-of-event when concurrent venue events take place. Practitioners should reference program planning activities contained in Chapters 11 through 13, as appropriate, for individual venue events comprising the regional/multi-venue event. These handbook chapters also describe and recommend various considerations concerning policies, regulations, and infrastructure deployment potentially applicable to recurring, single-theme regional/multi-venue events.

Some distinguishing considerations of this event category during the program planning phase include:

- A regional transportation committee on planned special events considers the planning and resource requirements of regional/multi-venue events in connection with managing all planned special events in a region. A primary committee focus concerns facilitating interagency coordination and collaboration. For instance, the committee may form a task force if stakeholders expect that multiple

Table 14-6
Program Planning Activities for Regional/Multi-Venue Events

PRODUCT	TOPIC	PAGE NO.
Institutional frameworks	<ul style="list-style-type: none"> • Creation of a regional transportation committee on planned special events (e.g., oversight team). 	2-15 4-2 5-3
	<ul style="list-style-type: none"> • Development of a formal planned special event permit program. 	4-10
	<ul style="list-style-type: none"> • Creation of a transportation operations task force for a regional/multi-venue event. 	5-3
	<ul style="list-style-type: none"> • Development of a joint operations policy. 	5-15
	<ul style="list-style-type: none"> • Development of a mutual-aid agreement to facilitate resource sharing. 	5-15

venue events will impact the same traffic flow routes and/or parking areas over the same time frame, thus requiring planning and operation as a regional/multi-venue event.

- Two or more stakeholders, representing multiple jurisdictions and/or disciplines, may establish a joint operations policy to ensure a cooperative effort in managing travel for all planned special events in a region.
- Stakeholders may develop a mutual-aid agreement to facilitate resource sharing and/or reimbursement for services in order to handle future planned special events, particularly events under this category.
- A planned special event permit program proves particularly effective for regional/multi-venue events that, because of such characteristics as event attendance, event times of occurrence, and event locations may (1) conflict with municipal or state guidelines and regulations and (2) impact transportation operations and the community. For instance, permit regulations may restrict the approval of a particular planned spe-

cial event if it conflicts with another planned special event. A section on program planning for local planned special events in Chapter 4 provides complete and in-depth coverage on developing a permit program applicable to regional/multi-venue events and other planned special event categories, notably continuous events and street use events.

- Funding represents a key public agency consideration for regional/multi-venue events in the program planning phase.
 - Commercial events may involve event organizers and participants from outside the community hosting the event.
 - Prior to initiating event operations planning activities for a specific regional/multi-venue event, stakeholders should establish a funding mechanism for recovering costs incurred in providing services during the event operations planning phase and resources on the day-of-event.
 - Funding often represents a requirement of a comprehensive planned special event permit program.

CHAPTER FIFTEEN

RURAL EVENT



Figure 15-1
Rural Event: U.S. Open Championship in Southampton, NY

PURPOSE

In order to assist the user in planning for a particular planned special event, this chapter describes an advance planning and travel management process and considerations specific to a *rural event*. It summarizes recommended policies, guidelines, procedures, and resource applications that were previously discussed in the first ten chapters of this technical reference. This chapter presents these guidelines and procedures in tables, flowcharts, and checklists that can be followed to help guide the user through all the stages of a planned special event of this category for a particular locale. Although Chapter 3 presents all the steps necessary to

manage travel for a planned special event, this chapter provides a roadmap to help guide the user through all five phases of managing travel for planned special events, identifying issues, analysis, and products applicable to rural events. To further guide readers, this chapter specifies references to best practices relating to this event category.

INTRODUCTION

In order to guide the user, this chapter addresses four key topics, corresponding to five phases of managing travel for planned special events, including: (1) *event operations planning*, (2) *implementation and day-of-event activities*, (3) *post-event activities*,

and (4) *program planning*. In planning for all planned special events in a region, the final section on program planning highlights issues to consider that evolve from and/or pertain to rural events. By following each one of the steps and procedures, the user will have identified and covered all the significant aspects that are necessary to result in successful management of travel for a planned special event with characteristics specific to a rural event.

A rural event encompasses any discrete/recurring event or continuous event that occurs in a rural area. Table 15-1 indicates different types of planned special events classified as a rural event. Rural events collectively have the event operation characteristics of discrete/recurring events at a permanent venue and continuous events with one notable exception; rural events take place in rural areas. Table 15-2 lists key characteristics of a rural event.

Table 15-1
Types of Rural Events

EVENT TYPE
<ul style="list-style-type: none"> • Fairs and festivals in rural areas • Events at a rural amphitheater • Events at a rural race track venue • Professional golf tournaments in rural areas

Table 15-2
Distinguishing Operating Characteristics of a Rural Event

CHARACTERISTIC
<ul style="list-style-type: none"> • Rural or rural/tourist area • High attendance events attracting event patrons from a regional area • Limited roadway capacity serving an event venue • Area lacking regular transit service • Events having either a time specific duration or continuous duration

Special Considerations

In light of the characteristics of a rural event, special considerations when planning such an event include:

- Need for stakeholders to assume new and/or expanded roles.
- Need to work closely with all affected stakeholders in order: (1) to gain their help in identifying concerns and (2) to introduce them to mitigation measures that they may be unfamiliar with due to the rural nature of the area.
- Need to work closely with involved stakeholders so that a trust relationship is established, thus lessening sensitive feelings of an outsider coming in and imposing initiatives that could overlook the significance of local issues.
- Existence of limited road capacity to access the event venue and potentially limited parking capacity at the venue.
- Existence of fewer alternate routes to accommodate event and background traffic.
- Lack of regular transit service and hotels near the venue.
- Existence of limited or no permanent infrastructure for monitoring and managing traffic.
- Generation of trips from a multi-county region.

EVENT OPERATIONS PLANNING

The scope and infrequent/one-time occurrence of a high-attendance rural event, coupled with the typical limited capacity of transportation systems in rural areas, requires the event planning team to develop: (1) a feasibility study, (2) a traffic management plan, and (3) travel demand management initiatives (as necessary) in the event operations planning phase. The stakeholder composition of an event planning team var-

ies by event, as some rural events represent community or not-for-profit events while others involve commercial dealings. In regard to a community-sponsored special event, transportation and/or law enforcement agencies usually bear the responsibility of developing all of the necessary event planning phase products. Recurring rural events, such as an annual festival or auto race, permit stakeholders to reference a past feasibility study and traffic management plan, coupled with operations successes and lessons learned, when conducting advance planning activities for a future event. However, due to the significant time between recurring rural events, the event planning team must anticipate (1) changes in the operations characteristics of a future event, (2) modifications to the transportation system serving the event, and (3) changes in the community (e.g., land use, socioeconomic, regulations, etc.).

Figure 15-2 presents 31 steps in the event operations planning process for all planned special events. The flowchart covers development and integration of the phase's aforementioned three products. Table 15-3 complements the flowchart by providing step-by-step guidance on issues and recommended analyses for a rural event. The table also presents reference information contained in this handbook that is specific to rural events. While all of the major handbook topics under event operations planning apply to a rural event, Table 15-3 indicates agency example applications (e.g., via narratives or photos) within the context of this event category. In turn, practitioners can use example applications presented for a rural event to manage travel for other categories of planned special events.

The flowchart in Figure 15-2 represents a suggested order of event operations planning activities. However, as noted below, the

event planning team can modify activities to create a dynamic and more effective planning process tailored to the scope of a specific planned special event:

- A jurisdiction planned special event permit process and requirements will scope, schedule, and direct event operations planning activities for rural events, particularly continuous events occurring in rural areas.
- Based on lessons learned from past special events at a particular permanent venue, stakeholders may program new infrastructure or adopt new policies (e.g., parking restrictions) early in the event operations planning process.
- Links between process steps are two-way as stakeholders evaluate alternative strategies and/or integrate traffic management plan components.
- The event planning team can develop different traffic management plan components concurrently.

The event operations planning process references information and concepts contained in the advance planning section of this handbook, and it directs the user to recommended guidelines, procedures, strategies, and resource applications for managing travel for a specific planned special event. When following the process, practitioners should review:

- Advance planning and travel management process and considerations provided in Chapters 11 and 12 depending on the type of rural event.
- Important advance planning considerations and external factors, summarized in Chapter 5, that influence planning activities. For instance, effective and rapid stakeholder review of event operations planning products requires: (1) an

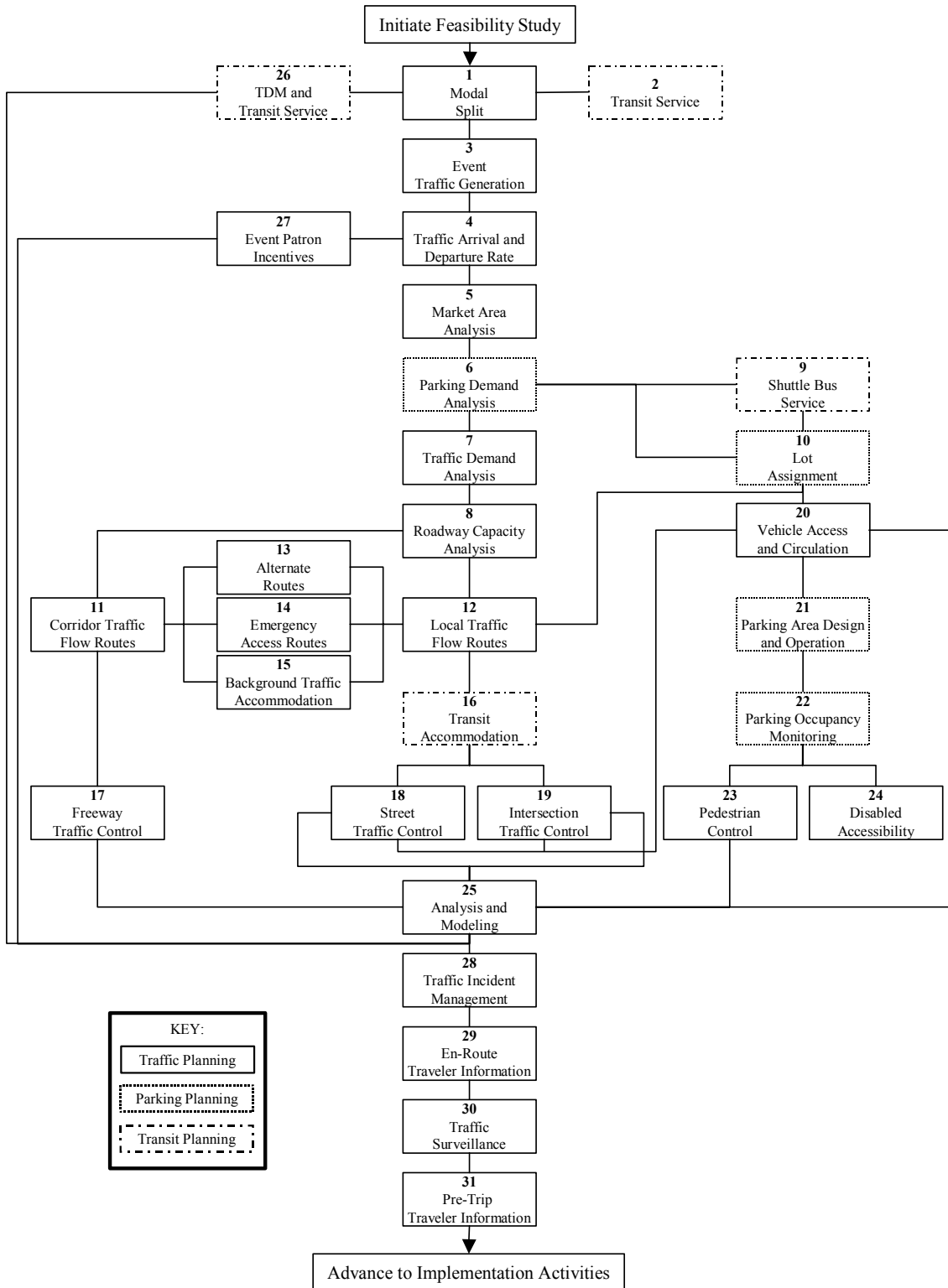


Figure 15-2
Event Operations Planning Process Flowchart

Table 15-3
Event Operations Planning Steps
Rural Event

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
1	5-20	<ul style="list-style-type: none"> Consideration of 100% automobile trips. 	<ul style="list-style-type: none"> <i>Example:</i> Commuter rail service as alternative mode of travel; Figure 5-6. 	5-20
2	7-9	<ul style="list-style-type: none"> Public transit not existing or serving area surrounding the venue location. 		
3	5-21	<ul style="list-style-type: none"> Influence of seasonal population on attendance. 		
4	5-22			
5	5-25	<ul style="list-style-type: none"> Larger market area for high attendance events. Origins of area visitors attending the event. 		
6	5-27	<ul style="list-style-type: none"> Use of off-site parking areas. Likely use of unpaved parking areas. 		
7	5-29			
8	5-30	<ul style="list-style-type: none"> Detailed analysis of roadways providing access to event venue and parking areas. 		
9	6-32			
10	6-13	<ul style="list-style-type: none"> Low capacity local traffic flow routes serving multiple parking areas. 		
11	6-38			
12	6-38			
13	6-40			
14	6-41			
15	6-43	<ul style="list-style-type: none"> Impact of high attendance events on background traffic flow. 		
16	6-45		<ul style="list-style-type: none"> <i>Example:</i> Exclusive bus route; Figure 6-36. 	6-46
17	6-49		<ul style="list-style-type: none"> <i>Special consideration:</i> Alternative lane operations for freeways. 	6-54
			<ul style="list-style-type: none"> <i>Example:</i> Portable changeable message sign; Figure 6-38. 	6-50
			<ul style="list-style-type: none"> <i>Example:</i> Appendix K – Equipment location plan. 	6-59
18	6-51		<ul style="list-style-type: none"> <i>Example:</i> Temporary reversible lane operation; Figure 6-1. 	6-1
			<ul style="list-style-type: none"> <i>Example:</i> Route marker signs; Figures 6-46 and 6-47. 	6-55 and 6-56
			<ul style="list-style-type: none"> <i>Example:</i> Appendix K – Equipment location plan. 	6-59
19	6-57		<ul style="list-style-type: none"> <i>Example:</i> Positive traffic control; Figure 6-54. 	6-58
			<ul style="list-style-type: none"> <i>Example:</i> Appendix K – Equipment location plan. 	6-59
20	6-16	<ul style="list-style-type: none"> Presence of few roadways providing access to venues and adjacent parking areas. Consideration of strategies to increase the capacity of site access roads and parking area access points. Potential for event patrons to park illegally on site access road shoulders. 	<ul style="list-style-type: none"> <i>Example:</i> Roadway shoulder utilization; Figure 6-9. 	6-18
			<ul style="list-style-type: none"> <i>Example:</i> Strategy for effecting parking area egress. 	6-20
			<ul style="list-style-type: none"> <i>Example:</i> Striping additional exit lanes on parking area access roads for egress; Figure 6-11. 	6-20
21	6-20	<ul style="list-style-type: none"> Likely use of unpaved parking areas. 	<ul style="list-style-type: none"> <i>Example:</i> Minimizing pedestrian/vehicular conflicts in parking areas; Figure 6-14. 	6-23
22	6-23			
23	6-28	<ul style="list-style-type: none"> Likely lack of sufficient existing pedestrian facilities within area surrounding the event site. Emphasis on pedestrian safety. 	<ul style="list-style-type: none"> <i>Example:</i> Temporary pedestrian bridge; Figure 6-23. 	6-31
24	6-32	<ul style="list-style-type: none"> Strong consideration for temporary venues. 		
25	6-9	<ul style="list-style-type: none"> Consideration of detailed analysis (e.g., tabletop exercises) and modeling for high attendance events. 		

STEP		EVENT-SPECIFIC ISSUES	EVENT-SPECIFIC REFERENCE INFORMATION	
NO.	PAGE		TOPIC	PAGE
26	7-2 to 7-14	<ul style="list-style-type: none"> High applicability of high occupancy vehicle incentives, local travel demand management, and charter bus service to this event category. 		
27	7-6			
28	6-72	<ul style="list-style-type: none"> Roadway network serving the event likely not lighted. Consideration of quick clearance initiatives to avoid breakdown of critical traffic flow routes. 	<ul style="list-style-type: none"> <i>Example:</i> Portable lighting; Figure 6-58. 	6-73
			<ul style="list-style-type: none"> <i>Example:</i> Congestion warning sign; Figure 6-59. 	6-73
29	6-61	<ul style="list-style-type: none"> Emphasis on portable roadside traveler information devices. 		
30	6-70	<ul style="list-style-type: none"> Emphasis on portable closed-circuit television, field observation, and/or aerial observation. 		
31	7-14	<ul style="list-style-type: none"> Communication to a regional audience. Event patrons likely unfamiliar with roadways and the transportation system serving the event. 		

annotated planning timeline, (2) a review process, and (3) performance standards. Under risk assessment, scenarios relating to excessive overcrowding may warrant consideration if planning for a sporting or concert event.

- Traffic management plan components in Chapter 6 that provide an overview of various principles driving plan development in addition to a contingency plan checklist.

IMPLEMENTATION AND DAY-OF-EVENT ACTIVITIES




Implementation activities represent an essential phase in advance planning for rural events. The traffic management team may involve new interagency relationships, and it requires an event-specific implementation plan to communicate specifics of the new traffic management plan prepared by the event planning team. Stakeholder development of implementation plan details for an event at a permanent venue focuses on transportation operation successes and lessons learned for previous, similar events at the subject venue.

Because particular rural event types occur infrequently, stakeholder simulation exercises prove valuable in assisting traffic management team personnel understand the roles and responsibilities of participating stakeholders in addition to the actions taken on the day-of-event. Exercises must involve field staff, some of whom represent personnel obtained temporarily from other regions for the purpose of increasing local stakeholder (e.g., state police, etc.) staff for an event. Temporary staff, although possibly experienced in traffic control, usually do not have familiarity with the local transportation system or roadways in the vicinity of the venue site. Equipment testing marks another key consideration as day-of-event operations at and in the vicinity of the event site usually depend on portable equipment for traffic control, surveillance, and dissemination of en-route traveler information. These intensive stakeholder activities reflect the typical unfamiliarity with managing travel for a rural event coupled with the fact that transportation management activities, on the order required for a planned special event, may not regularly take place in the vicinity of the event site.

Table 15-4 presents a checklist of implementation and day-of-event activities for

Table 15-4
Checklist of Implementation and Day-of-Event Activities for Rural Events

HANDBOOK PAGE	ACTION	APPLIES 
8-2	• Develop an implementation plan.	<input type="checkbox"/>
8-6	• Conduct a stakeholder simulation exercise(s).	<input type="checkbox"/>
8-8	• Test equipment resources slated for use on the day-of-event.	<input type="checkbox"/>
8-9	• Recruit and train volunteers to fulfill personnel resource needs.	<input type="checkbox"/>
9-2	• Implement a traffic management team management process.	<input type="checkbox"/>
9-4	• Designate a multi-agency command post.	<input type="checkbox"/>
9-6	• Conduct a traffic management plan evaluation(s) during the day-of-event.	<input type="checkbox"/>
9-6	• Establish protocol for traffic management team officials to consider and implement changes to the traffic management plan to accommodate real-time traffic conditions.	<input type="checkbox"/>
9-8	• Establish interagency communication protocol.	<input type="checkbox"/>
9-9	• Review communication equipment compatibility.	<input type="checkbox"/>
9-10	• Use the media to communicate with event patrons and other transportation users.	<input type="checkbox"/>
9-12	• Perform traffic monitoring on the day-of-event.	<input type="checkbox"/>

stakeholders to consider regarding any rural event. As indicated in the table, the event planning team must determine, based on various event operations characteristics (e.g., event type, event location, event time of occurrence, attendance, market area, etc.) and other external factors, what unique set of activities apply in handling a specific special event. In addition, stakeholders should review the special considerations and recommended activities presented in Chapters 11 and 12 for discrete/recurring events at a permanent venue and continuous events, respectively, as appropriate based on the type of rural event. The table facilitates fast access to handbook sections providing detailed guidance, including recommended strategies, protocol, and resource applications, required by users to plan and execute these activities.

Some distinguishing considerations of this event category during the day-of-event activities phase include:

- The scope of high-attendance rural events demand personnel resources that may exceed the level of available staff from local event stakeholders. Supplementing traffic management team personnel with temporary staff and volunteers may represent a necessary action to meet staffing requirements for rural special events. Many volunteers have no past experience in tasks associated with traffic and pedestrian control and parking operations. As a result, volunteer training becomes paramount to the success of day-of-event operations. Chapter 8 contains checklists and relevant considerations for assessing personnel resource needs and using volunteers on the day-of-event. The chapter also specifies volunteer training activities and summarizes basic functions required of all volunteers.
- The traffic management team likely includes stakeholder representatives involved in managing travel for a particular rural event type for the first time. To

ensure successful traffic management plan deployment, the traffic management team must adopt a formal management process and establish an interagency communication structure and protocol to support day-of-event operations.

- Other essential team management considerations involve (1) the designation of an Incident Commander for the planned special event and (2) the set up of a temporary, multi-agency command post at or near the event venue.
- Traffic management team officials should anticipate enacting modifications to the traffic management plan during the rural event.
- Surveillance information and performance evaluation data define transportation operation conditions and, thus, influence decision-making at a day-of-event briefing. Given the typical lack of transportation management centers in rural areas, transportation system operators usually monitor system operations from the event command post using portable equipment (e.g., laptop computers, devices using radio/cellular/spread spectrum radio communication, etc.).
- The collection and evaluation of transportation system performance data proves valuable in guiding decision-making not only on the day-of-event but also for recurring rural events. Stake-

holders can archive raw data for use in future feasibility studies, and various evaluation measures can identify specific areas that require improvement for future, similar events.

- The traffic management team must exercise great care in collecting performance evaluation data in order to ensure data quality and consistency.

POST-EVENT ACTIVITIES



All of the primary products of this phase (e.g., participant evaluation, post-event debriefing, and post-event report) have a high level of applicability to rural events. Given the infrequent occurrence of rural events coupled with the scarcity of travel forecast data, post-event activity results represent a key resource in planning for future rural events in a region.

Table 15-5 presents a checklist of post-event activities for rural events. The post-event activities section of this handbook provides detailed information on common techniques, special considerations, and recommended protocol that facilitate the activities listed in the table.

Table 15-5
Checklist of Post-Event Activities for Rural Events

HANDBOOK PAGE	ACTION	APPLIES
10-2	• Review measures of effectiveness identified in event operations planning phase.	<input checked="" type="checkbox"/>
10-3	• Compile agency measures of effectiveness.	<input type="checkbox"/>
9-14	• Compile performance evaluation data.	<input type="checkbox"/>
10-5	• Conduct stakeholder participant debriefing.	<input type="checkbox"/>
10-6	• Conduct event patron survey.	<input type="checkbox"/>
10-7	• Conduct public survey.	<input type="checkbox"/>
10-7	• Conduct a post-event debriefing meeting.	<input type="checkbox"/>
10-10	• Prepare a post-event report.	<input type="checkbox"/>

Some distinguishing considerations of this event category during the post-event activities phase include:

- Practitioners should reference the post-event activities guidelines and considerations contained in Chapters 11 and 12, as appropriate, based on the type of rural event.
- In regard to participant evaluation, rural event patron travel surveys yield important information and statistics that can assist practitioners in (1) improving the accuracy of future rural event travel forecasts and (2) developing travel demand management incentives (e.g., express/charter bus services, event patron incentives) for the market area served by rural events.
- Periodic public surveys warrant consideration for special events under this category as event performance evaluation data fails to assess all community impacts. Survey results alert special event stakeholders of impacts to affected residents and businesses, in addition to non-attendee transportation system users, that may continue to occur with each successive special event at a particular venue location. As a result, stakeholders can develop and implement appropriate strategies (e.g., enforcement, etc.) and regulations to mitigate the identified impact(s) for future planned special events.
- Post-event debriefings represent a common and recommended stakeholder activity for all rural events.
 - Written comments should be obtained from temporary, borrowed staff used on the day-of-event if staff can not participate in a debriefing meeting.
 - A key aspect of a post-event debriefing for rural events involves

preparing detailed meeting minutes that include the identification of key successes and lessons learned.

- Considering the potential significant time between rural events, stakeholders must chronicle participant survey results and debriefing meetings so that those stakeholders charged with managing travel for future rural events can tap the wisdom of past participants.
- The occurrence of a major, recurring rural event warrants development of a post-event report. In turn, the report can serve as a working document to assist in advance planning for the next (year's) event.
- A post-event report for a recurring rural event should include an operational cost analysis to assist stakeholders in identifying potential cost-saving resource deployment strategies for the next event occurrence.

PROGRAM PLANNING



Program planning activities involve the development of policies, programs, and initiatives that facilitate improved planning and management of travel for future planned special events.

Program planning for rural events include activities, as summarized in Table 15-6, on both a regional and local level. Practitioners should reference program planning activities contained in Chapters 11 and 12, as appropriate, depending on the type of rural event.

Some distinguishing considerations of this event category during the program planning phase include:

Table 15-6
Program Planning Activities for Rural Events

PRODUCT	TOPIC	PAGE NO.
Institutional frameworks	• Development of a formal planned special event permit program.	4-10
	• Creation of a transportation operations task force for a recurring rural event or specific permanent venue.	5-3
	• Development of a joint operations policy.	5-15
	• Development of a mutual-aid agreement to facilitate resource sharing.	5-15
Policies and regulations	• Traffic and parking restrictions.	5-10
	• Public-private towing agreements.	5-16
	• Public information safety campaign.	6-73
	• High occupancy vehicle incentives.	7-3
Infrastructure deployment	• Planned alternate route for diverting background traffic around a venue.	6-40
	• Portable traffic management system.	6-56
	• Express, charter, or shuttle bus service.	6-32
		7-11
		7-12
• Telephone information systems.	7-17	

- The fixed location of planned special event venues (e.g., fairgrounds, amphitheaters, golf courses, and race tracks) in rural areas allow for the easy identification of stakeholder representatives involved in planning and day-of-event travel management for high-attendance special events at these venues. These representatives may collaborate year-round as an inter-jurisdictional, multi-discipline task force, working to: (1) strengthen interagency coordination for future special events, (2) identify needs relative to minimizing community impacts and improving transportation system operations during venue events. The latter involves proposing new policies, regulations, and infrastructure deployments to support future event-specific traffic management plans and travel demand management initiatives.
- A planned special event permit program proves particularly effective for rural events that, because of such characteristics as event attendance and event location, may (1) conflict with municipal or state guidelines and regulations and (2) impact transportation operations and the community. The program specifies a permit process, coupled with supporting restrictions and requirements, that allow stakeholders to plan and assess all types of rural events within a common framework. A section on program planning for local planned special events in Chapter 4 provides complete and in-depth coverage on developing a permit program applicable to rural events.
 - Two or more stakeholders, representing multiple jurisdictions and/or disciplines, may establish a joint operations policy for managing travel for all planned special events in a region.
 - Stakeholders may develop a mutual-aid agreement to facilitate resource sharing (e.g., personnel or equipment) and/or reimbursement for services in order to handle future planned special events.
 - Because rural events usually occur infrequently and occasionally at temporary venues, an infrastructure needs assessment on the program planning level

should focus on equipment and technology applications transferable to managing all planned special events in a region and/or day-to-day transportation system operations.

- Funding represents a key public agency consideration for rural events in the program planning phase.
 - Commercial events may involve event organizers and participants from outside the community hosting the event.
 - Prior to initiating event operations planning activities for a specific rural event, stakeholders should establish a funding mechanism for recovering costs incurred in providing services during the event operations planning phase and resources on the day-of-event.
 - Funding often represents a requirement of a comprehensive planned special event permit program.

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**APPENDIX A
SAMPLE SPECIAL EVENT PERMIT
REGULATIONS, APPLICATIONS, AND AGREEMENTS**

SAN DIEGO, CA: SPECIAL EVENT REGULATIONS ON MITIGATING PUBLIC IMPACTS



MITIGATION OF IMPACT

As an event organizer, you are required to develop mitigating measures to accommodate the negative impact your event may have on entities that may be affected by your activities. Most neighborhoods and business districts are represented by a number of community groups that are officially recognized by the City of San Diego. These groups include, Community Planning Groups, Town Councils, Business Improvement Districts, and Recreation Councils. If your event venue is in an area that is governed by one or more of these groups, ***you must present your event concept to these organizations for their support or endorsement.*** You must also meet with the residents, businesses, places of worship and schools that may be impacted by the noise and street closures related to your event.

The City of San Diego requires that notices be mailed or hand delivered ***two weeks prior to your event*** to all entities impacted by event activities. Information in this notice should include, but not be limited to, the date(s), day(s), time(s), location(s) and types of activities taking place during your event. The notice must also give detour or alternate route information if regular access is affected or if transportation systems are impacted. The notice also must include a telephone number where members of the public can contact your organization if they have concerns or issues that need to be addressed.

The City of San Diego will also require you to provide advisory signs placed a minimum of two weeks prior to your event if the event impacts a major use roadway. Advisory signs are intended to provide advanced notice to the regular users of a roadway of the scheduled closure.

WASHINGTON STATE DOT: STATE HIGHWAY USE DURING STREET USE EVENTS

CHAPTER 7 SPECIAL HIGHWAY USE

7.1 BICYCLING, RUNNING, WALKING, FESTIVAL, AND PARADE EVENTS

RCW 46.61 prescribes the rights and duties for bicycle and pedestrian travel on highways, county roads, and city streets. With regard to bicycle or pedestrian events, traffic control considerations are essential to minimize potential traffic hazards.

Requests to use state highways for bicycle, running, and walking related events require written approval from the district to the event sponsor for events occurring within a district. Headquarters coordinates the required activities for multi-district events, responding to the involved districts and the State Patrol. Approvals may be granted after consideration and documentation of the following guidelines:

- A. Event sponsors should be encouraged to use county roads or city streets if at all possible.
- B. Where use of a highway without access control is necessary, there should be a detour route available. The detour should be satisfactory for through traffic and appropriately signed by the local jurisdiction(s). Request for state highway use within incorporated areas should receive concurrence from the affected city or town.
- C. Sponsor developed traffic control plans must adequately and safely accommodate anticipated traffic conditions. Such plans must be approved by the district traffic engineer. All traffic control devices shall conform to the *Manual on Uniform Traffic Control Devices* (MUTCD).
- D. The organizers, or sponsors, will prepay all extraordinary costs for labor and materials provided by the Department of Transportation.
- E. The party requesting the state highway use shall notify, at least 48 hours (preferably seven days) in advance of the event, all local fire, ambulance, transit, law enforcement departments, and other service oriented activities that could be affected by the event.
- F. The department must be included as an additional insured when highway authorities are not specifically named within event insurance policies.

Department regulations and policies do not allow bicycling, running, or walking related events on limited access highways except when prior approval is granted at locations where no alternate route exists. On an event basis, written approval by the State Operations and Maintenance Engineer is required.

Where a limited access highway has been approved for use, sufficient lane(s) are to be left open in each direction to allow expected volumes of traffic to operate without serious congestion. Appropriate traffic control plans and devices are to be used to enhance safety and to warn event participants and vehicle drivers of each others presence.

Public information efforts should be commensurate with the anticipated traffic impacts. The news media should be encouraged to publicize the event and possible congestion. This can be accomplished by imposing special requirements for public information on the sponsor, by news releases or media contacts by WSDOT personnel, or a combination.

Provide informational copies of correspondence related to such events to the State Traffic Engineer. When these events may affect ferry operations, contact the Marine Transportation Division.

VIRGINIA BEACH, VA: PERMIT APPLICATION

OUTDOOR EVENT AND ENTERTAINMENT APPLICATION



CONVENTION AND VISITOR DEVELOPMENT
 Resort Management/Special Events and Film Office (SEAFO)
 2101 Parks Avenue, Suite 502
 Virginia Beach, VA 23451
 (757) 437-4800

OFFICE USE ONLY	Application Number: _____	Event Supervisor: _____
	Insurance: <input type="checkbox"/> Rec'vd <input type="checkbox"/> City Purchased?	Fee Paid: <input type="checkbox"/> Yes <input type="checkbox"/> No

The information requested by the Special Events Application form will be used to determine your eligibility for the permit requested. Completed forms may be released upon the request of any citizen, as provided by the Freedom of Information Act. Completion of the form is voluntary, however, failure to do so will prevent processing of your application.

Any misrepresentation in this application or deviation from the final permit conditions may result in immediate revocation of the permit, the halting of the event, and possible loss of privilege to host events in the future.

Please answer all questions, indicate N/A if the question does not apply to your event.

PERMIT PROCESSING:

Event	Application Submittal / Processing Time	Processing Fee <small>Checks made payable to the City Treasurer</small>
Party on Private Property, Block Party, Non-Commercial Carnival	30 days prior to the event	\$50.00
Outdoor Entertainment (Seasonal)	60 days prior to the event	\$100.00
Outdoor Entertainment / 2 or more days	60-90 days prior to the event	\$150.00
Parade / Major Thoroughfare	60-90 days prior to the event	\$100.00
Parade / Residential Streets, One Day Event, Commercial Carnival	30-60 days prior to the event	\$75.00

APPLICANT AND ORGANIZATION INFORMATION

Applicant's Name: _____

Are you 18 years of age or older? Yes No Are you representing yourself? Yes No

Are you representing an organization? Yes No Is it a non-profit organization with 501(c)(3) status? Yes No
 (Attach a copy of the 501(c)(3) certificate or note the identification number) _____

Organization's Name: _____

Mailing Address: _____

City: _____ State: _____ Zip: _____

Day Phone: _____ Evening Phone: _____

Fax Number: _____ On-Site Cellular: _____

Pager: _____ E-mail: _____

ABOUT THE EVENT AND ENTERTAINMENT

Please check all that apply. This event is a...

*Parade / Run / Walk / Bike or Auto Procession Block Party **Carnival Tent Revival

Festival Concert Beach / Ocean Event Sporting Event Private Party

Other: Please explain: _____

The event is... Private (by invitation only) Open to the General Public

The event will be hosted on... Private Property Commercial Residential Public Property

Event Name: _____

Location(s): _____
 (Please attach Site Map)

Event Date: _____ Setup Time: _____ Start Time: _____ End Time: _____ Breakdown Time: _____

Rain Date(s) / Times: _____

Please note the range of total anticipated attendees (including spectators and participants):

- 0 - 150 150 - 500 500 - 1000 1000 - 5000 5000+

Please indicate how many times this event has been hosted before.

- 1st time 2 - 4 times 5+ times Where? _____

EVENT-AT-A-GLANCE PLEASE INDICATE THE VARIOUS EVENT ACTIVITIES. CHECK ALL THAT APPLY.

- Alcohol Bleachers Petting Zoo Staging
 Banners / Signs Food Vending / Sampling Shuttles / Satellite Parking Public Address System
 Boats Live Music / Band Tents
 Beach Activity Mechanical Rides / Devices Vendors (non-food / beverage)

***Parade / Run / Walk / Bike or Auto Procession**

Assemble area / time: _____

Disassembly (finish) area: _____ Time: _____

Describe parade route (attach a map of the entire route and highlight streets) _____

Number of marching units: _____ Number of non-marching units: _____

Number of floats (specify height, length, etc.): _____

Types of vehicles: _____ Cars _____ Motorcycles _____ Pickup trucks _____ Semi trucks _____ Other

Types of animals: _____ Horses _____ Dogs _____ Other

Will you need special arrangements for dignitaries? Yes No

Will you have a reviewing stand? Yes No Where will it be placed? _____

****Carnival or Petting Zoo:**

How many mechanical rides or other amusement devices such as a moonwalk will be used? _____

What types: _____

Amusement company's name: _____

Address: _____ Phone: _____ Fax: _____

Company's representative: _____ Phone: _____ Fax: _____

FOOD, NON-FOOD, AND OTHER VENDOR INFORMATION**

A vendor is anyone who is serving, selling or sampling food, beverages, or merchandise.

FOOD: Please check all that apply

- Food will be... Served Sold Catered Prepared in Church Kitchen
 Prepared Outdoors Delivered from another location Prepared in School Cafeteria

Food Date(s): _____ Times: _____

Time food vendor setup ready for inspections: _____

**Please fill out attached vendor information sheet (one for each vendor).

NON-FOOD:

A separate Vendor Information Sheet (attached) shall be completed for each vendor participating in the event.

ALCOHOL:

Alcohol information must be completed regardless of whether the event is public or private. Please answer all questions that apply:

Type: Draft Beer Canned Beer Wine Liquor Will be: Sold Served

Date(s): _____ Times: _____

STRUCTURES, TENTS, BLEACHERS AND STAGES

TENTS: Please give an overview of your tent plan. List type (by Code), number, and size(s) of tents to be erected.
 Tent Codes: **C** - Cooking underneath **GA** - General assembly (requires floor plan showing exits) **S** - Sales of food, products, etc.
 Tent Code Number of Tents Sizes

_____	_____	_____
_____	_____	_____

BLEACHERS: If your event will have bleachers, please provide the type of bleacher, size, and supplier.

Size	Supplier	Phone Number
_____	_____	_____
_____	_____	_____

STAGES:

Size	Supplier	Phone Number
_____	_____	_____
_____	_____	_____

SECURITY: Security is required when -

- alcohol is being served / sold,
- materials / equipment is left overnight,
- live entertainment is provided.

Please describe your security plan: _____

Describe type of equipment left overnight: _____

Uniformed presence provided by: Off-duty Police Officers Private Security Volunteers Hired Staff
 Sheriff's Deputies

When: _____ How many? _____

RESTROOMS AND WASTE DISPOSAL

Please note number of trash receptacles you will require. 5 - 10 10 - 20 _____

Have you contracted with a portable restroom company? Yes No

If "yes," please provide the company name and an after hours / emergency phone number.

Delivery date of portable restrooms: _____ Pick-up date: _____

Please list the number and locations of portable restrooms:

Number	Location
_____	_____
_____	_____
_____	_____

BANNERS AND SIGNS

Please provide us with an overview of your banner and sign plan. List number, location, and type of banners.

Location of banner codes: **ES** - Within event site **LP** - On street light poles **BWR** - Boardwalk railing

Type of banner codes: **DI** - Directional / Informational **SP** - Sponsorship **OT** - Other

Number of Banners / Signs	Location Code	Type Code	Comment
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

PARKING AND TRANSPORTATION

How will people get to / from event?

- Personal Vehicles
- Shuttle / Satellite Parking
- Other: Please explain: _____

Where will the event attendees / participants park?

- On-Street / Public Parking
- Reserved / VIP Parking
- Satellite Parking Location: _____
- Other: Please explain: _____
- School Grounds
- Church Grounds

Do you require special parking? (VIP, RVs, trailers, support vehicles) Yes No

Number of Spaces	Location	Purpose

**Due to limited parking in the resort area all parking requests may not be granted. Applicant shall contact SEAFO two (2) weeks prior to the event to request parking passes for support vehicles in designated areas in / near the event site.

MEDICAL Describe in detail your medical plan:

AMERICANS WITH DISABILITIES ACT

Some events must comply with ADA requirements. Please indicate which of the following you will have at your event. Please check all that apply.

- Ramps / walkways on the beach Sign-language translator Hearing-impaired listening devices
 Designated wheelchair viewing areas Handicapped-accessible restrooms Handicapped-accessible shuttles

OTHER PERMITS

In addition to an Outdoor Event and Entertainment permit, other City, State, and private agencies may require a permit relative to your event. Please indicate if you have applied for a permit or will be applying for a permit from each agency. Please use the following codes: **HA** - Have Applied **WA** - Will Apply **DNA** - Does Not Apply to This Event

- Code Department / Agency
- _____ ASCAP / BMI (playing of music)
 _____ Health Department (food concessions, food sampling, etc.)
 _____ Fire Department (fireworks, pyrotechnics, special effects)
 _____ Commissioner of the Revenue (business license, sporting tax, admission tax, prepared F&B, etc.)
 _____ State Department of Taxation (sales tax)
 _____ U.S. Coast Guard (federally regulated waters)
 _____ ABC Board (alcoholic beverages)
 _____ Planning / Permits and Inspections (tents, bleachers, amusement devices, etc.)

EVENT BOUNDARIES (Resort Events Only)

Please define the boundaries of your event:

North: _____ South: _____
 East: _____ West: _____

TELECOMMUNICATIONS (Resort Events Only)

Please indicate if your event has the following needs. Please note number and location on your site map.

- T1 lines. Number and location: _____
 Regular phone lines. Number and location: _____
 Other: _____ Number and location: _____

ON-SITE COMMUNICATIONS (During Event)

Cellular Phone #1 Day of Event: _____ Will you use radio communications? Yes No
 Cellular Phone #2 Day of Event: _____ Radio provided to SEAFO staff? Yes No

HOLD HARMLESS CLAUSE:

Permittee (applicant / organization) shall assume all risks incident to or in connection with the permitted activity and shall be solely responsible for damage or injury, of whatever kind or nature, to person or property, directly or indirectly arising out of or in connection with the permitted activity or the conduct of permittee's operation. Permittee hereby expressly agrees to defend and save the City, its officers, agents, employees, and representatives harmless from any penalties for violation of any law, ordinance, or regulation affecting its activity and from any and all claims, suits, losses, damages or injuries directly or indirectly arising out of or in connection with the permitted activities or conduct of its operation or resulting from the negligence or intentional acts or omissions of permittee or its officers, agents, and employees.

Applicant's Name (Printed Neatly) _____

Applicant's Signature _____

Date _____

EVANSTON, IL: SPECIAL EVENT HOLD HARMLESS AGREEMENT

Hold Harmless/Indemnification Agreement

_____ has requested permission to _____ in the City of Evanston. For consideration of such permission, _____ hereby fully releases and discharges the City of Evanston, its officers, agents and employees from any and all claims from injuries, including death, damages or loss, which may arise or which any be alleged to have arisen out of, or in connection with the event.

_____ further agrees to indemnify and hold harmless and defend the City of Evanston, its officers, agents and employees from any and all claims resulting from injuries, including death, damages or losses, including, but not limited to the general public, which may arise or which may be alleged to have arisen out of, or in connection with this event.

In addition, _____ shall furnish two copies of certificates of insurance with the City of Evanston named as an additional insured in the amount of \$1,000,000 unless a greater amount is warranted.

Company

Name

Title

Signature

Applicant's Statement of Agreement:

I hereby affirm that the above information is true and correct in describing the intent of this application. I, _____, the undersigned, agree to abide by the provisions in this application and the instructions attached hereto.

(Signature of Applicant)

(Date)

HOT SPRINGS, AR: STREET USE EVENT CHECKLIST

SPECIAL REQUIREMENTS FOR USE OF WHITTINGTON AVENUE *CHECKLIST*

The following checklist applies to any special event permit issued for the use of Whittington Avenue from its intersection with Ozark and Water Streets west to Woodfin Street. A complete description of these requirements is attached to Ordinance Nos. 4458 and 4556. Event Sponsor must comply with the requirements as stated in Ordinance Nos. 4458 and 4556 and their attachments. In this regard, the Sponsor must:

- Provide written notification to area residents as illustrated in Exhibit 1 to Ordinance No. 4458 not less than 3 nor more than 10 days prior to the event.
- Provide "escort passes" for residents on the boulevard section of Whittington and to the residents of Quartz Street prior to event.
- Arrange with a local ambulance service for the provision of an ambulance to be stationed in the Whittington area during the event.
- Contact the City's Engineering Office (Municipal Building, 133 Convention Blvd., 321-6860) and arrange for pickup of required signs. (A refundable deposit of \$20.00 per sign must be paid at the time the Sponsor picks up the signs.)
- Install temporary signs at: (1) Park Ave. & Gulpha Gorge Rd., (2) Blacksnake Road at Bull Bayou, (3) Prospect at West Mountain Drive, and (4) east and west ends of the Whittington boulevard section.
- Install detour signs as indicated by Exhibit 3 to Ordinance No. 4458.
- Install barricades at the intersection of Whittington and Woodfin as indicated by Exhibit 3 of Ordinance No. 4458.
- Provide radio equipped marshals at all intersections along Whittington (12 minimum).
- Arrange to reopen Whittington between events, if applicable.
- Ensure that one lane of traffic on Whittington Avenue remains open at all times in the designated event area (from Ozark and Water Streets west to Woodfin).
- Any special event expected to last for a duration of two hours or more shall require the sponsor to place on each end of Whittington Park one male and one female port-a-potty.
- Remove and return all city owned signs to the City's Engineering Office (Municipal Building, 133 Convention Blvd.) within two days after the event.
- Event sponsors are responsible for providing all necessary barricades and traffic cones. (Available from rental and/or construction companies.)

MONTGOMERY COUNTY, MD: SPECIAL EVENT TRAFFIC CONTROL REGULATIONS

PUBLIC RIGHT-OF-WAY PERMIT

SPECIAL REQUIREMENTS:

(check all applicable boxes)

- (1) Signs notifying the public **must** be posted a minimum of one week prior to the event on the right side of all effected roadways where they intersect with major roadways. (see illustration "A" for sign details).

When applicable, "ROAD CLOSED" signs **must** be posted the day of the closure at the last **major** intersection where motorists can detour to avoid the closure (see illustration "D") and at the actual point of the closure (see illustration "C").

Lettering and symbols on the above described signs **must** be legible for passing motorists to easily see and comprehend.

- (2) Temporary parking restriction signs **must** be posted 72 hours in advance and remain posted for the duration of the event at locations where parked vehicles would conflict with the event.

See illustration "B" for the required sign message and dimensions. Lettering and symbols **must** be legible enough to be easily seen and comprehended.

- (3) Traffic drums or cones (see illustration "E" and "F") **must** be used at all points of closure — starting areas, the crossing of intersections, locations where the route changes directions, and all driveways (except single family homes).

- (4) For the closure of a lane or a portion of a lane along a segment of roadway, the permittee **must** provide 28" high traffic cones or traffic drums placed no further than 40' apart to separate and define the portion of the roadway to be used for vehicle travel from that reserved for the event.

- (5) Traffic drums or cones **must** be in place just prior to the times allocated for the event (as specified herein) and removed as soon as the last participant clears each section of the event route (no later than the ending time as stated on the permit).

- (6) For races or moving events, a "LEAD and "CHASE" vehicles **must** be used in front and behind to insure the safety of all participants during the event.

- (7) Residents and/or businesses of all properties fronting the subject road sections and/or those whose access is directly impacted by the event **must** be notified in writing by the permittee a minimum of 72 hours prior to the event.

- (8) Vehicle access to and from properties abutting and/or directly affected by the event **must** be permitted at all times: **EMERGENCY VEHICLES SHALL BE PERMITTED THROUGH PASSAGE AT ALL TIMES.**

- (9) Permittee **must** secure police assistance at locations that require complete closure of the roadway and at all signalized and/or major intersections where the participants may be crossing without regard to existing traffic control devices.
- (10) Competent adult monitors **must** be stationed at all other intersecting roadways and/or driveways (except those of signal family homes) not controlled by police.
- (11) Competent adult monitors **must** have copies of "Detour Maps" to inform passing motorist of alternate routes around the event.
- (12) If applicable, permittee **must** secure the necessary permits from Maryland State Highway Administration and/or other agencies or municipalities for the temporary use of their right-of-way.
- (13) The "Double Yellow Center Line" rule **shall** be enforced at all times during the race. This rule also applies to any practice runs the participants partake in prior to the race.

"The Double Yellow Center Line Rule prohibits any participant from crossing the center line of any roadway during practice or the actual race with the exception of the start of the race and the sprint to the finish line at the end of the race".
- (14) A "Rolling Road Block" type of closure **shall** be used during the event. At no time will any county roadways be closed to motorists during the event, except during the start of the race and the finish of the race.
- (15) "Practice Runs" are allowed only on the roadways as stated in the permit and **must** be held on the day of the event and only during the times as stated in the permit.

APPROVED: _____ **DATE:** _____
 TRAFFIC CONTROL AND LIGHTING ENGINEERING

A

OMIT THIS LINE IF NOT APPLICABLE
PARADE, RACE, BLOCK PARTY, ETC.
DAY OF WEEK - MONTH
(i.e. MON - MAY 5)
STARTING TIME AND ENDING TIME
(i.e. 5am to 5pm)
OMIT THIS LINE IF NOT APPLICABLE



ROAD CLOSED
EVENT
DAY - DATE
TIME TO TIME
NO PARKING

MINIMUM 30" X 30"
3" BLACK BLOCK LETTERS
ON WHITE BACKGROUND

B

NO
PARKING
DAY - DATE
TIME - TIME
←→

2 1/2" INCH
RED BLOCK LETTERS
1 1/2" INCH
RED BLOCK LETTERS

C

ROAD
CLOSED

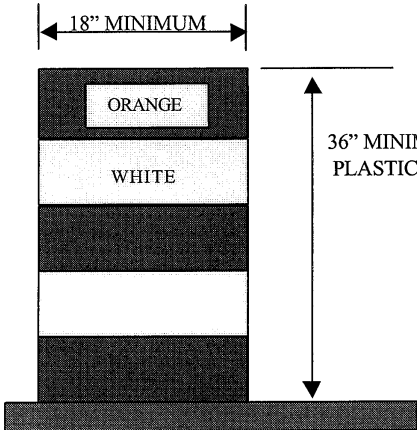
MINIMUM 48" X 30"
BLACK BLOCK LETTERS
ON WHITE BACKGROUND

D

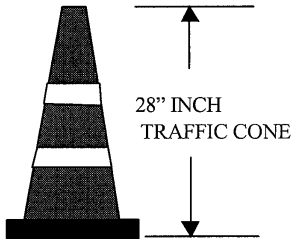
ROAD CLOSED
TO
THRU TRAFFIC

MINIMUM 60" X 30"
BLACK BLOCK LETTERS
ON WHITE BACKGROUND

E



F



MARCO ISLAND, FL: SPECIAL EVENT DIRECTIONAL SIGN REGULATIONS

DIRECTIONAL SIGNS IN ROW:

Directional signs located within the right-of-way must be a minimum of 18" x 24" and a maximum of 24" x 32". It is recommended that the signs be blue with white lettering. The signs shall be professional in appearance and shall include the special event permit number (can be placed on back of sign). Signs may not be erected prior to 7 days before the scheduled event and must be removed with 24 hours of the completion of the event. Signs may not be located within medians, attached to traffic control signs or other authorized highway signs. Signs shall be located a minimum distance of 30 feet from street intersection and a minimum distance of 6 feet from the edge of pavement or 3 feet from the back of a curb. The bottom of all signs shall be a minimum of 12 inches above existing ground and the top of the sign shall not exceed a distance of 5 feet above the existing ground.

WALWORTH COUNTY, WI: COUNTY CODE SECTION 10-28 RECOVERY OF EXPENSES INCURRED FOR PROVIDING EXTRAORDINARY GOVERNMENTAL SERVICES

Extraordinary services means reasonable and necessary services provided by the County above and beyond its normal capabilities and requirements of providing for public health and safety that cause a measurable burden upon the County. Such services shall include extra police protection, traffic control or refuse collections and the administration of this Ordinance.

Sec. 10-28. Recovery of expenses incurred for providing extraordinary governmental services.

- (a) As a condition of any license granted hereunder, the licensee shall be responsible for reimbursing the County for the cost of providing extraordinary governmental services required as a result of the licensed event as provided in this section.
- (b) There shall be a charge for each ticket sold, as shall be determined, from time to time, by the Executive Committee, which charge shall be collected by the licensee and forwarded to the County within 30 days after each event. The licensee shall provide the County with complete ticket manifests for each event, and grant to the county the right to audit attendance figures for each event within one (1) year following the date of the event.

APPENDIX B
EVENT-ORIENTED RISK SCENARIO CONTINGENCY PLANS

NEW JERSEY DOT CONTINGENCY ALTERNATE ROUTE PLAN FOR THE
2000 REPUBLICAN NATIONAL CONVENTION

**Diversion Routing Plan for
Route 30 and I-676
Republican National Convention
7/30/00**

Due to the Republican National Convention and the high probability of road closures on 7/30/00, NJDOT will be placing approximately 15 variable message signs in the Camden County area. The signs will be used to direct delegates, buses and other interested parties to the Camden Water front. In the event of a closure these signs will be changed to direct traffic to pre-planned diversions. Outlined below are the three scenarios NJDOT is prepared to support.

Scenario No. 1 All roads and bridges open:

VMS located throughout Camden County will direct the traveling public to exit 5A on I-676 northbound or the Mickle Boulevard exit of Route 30 west bound for all RNC sponsored events.

Scenario No. 2 Ben Franklin Bridge Closure: Task Force 1

NJDOT safety crew (425) along with NJSP trooper support, will close I-676 NB and force all traffic off at the Atlantic Avenue (Exit No. 4). Once on the ramp all traffic will be directed to the left (west) and will either go straight for the RNC events or make a left and back onto I-676SB. VMS on I-676 and Atlantic Avenue will be utilized to assist in directing motorists. Additional VMS located on the Atlantic City Expressway, Route 42, and I-295 will also be advising motorists of the bridge closure. Detour signs will be placed along Atlantic Avenue at the intersection of Broadway and 2nd Street. NJDOT's traffic operation center (TOC) will be in close communication with the traffic services advising them of the closure.

The second crew (415) will close Route 30 west bound at the Mickle Boulevard Exit and force all traffic onto Flanders Avenue. At the gore area below the ramp all traffic will be directed either left for the RNC events, or right onto 10th Street to Federal Street and back onto Route 30 eastbound. VMS and detour signs will be utilized to assist in directing traffic. Additional VMS located on Routes 38, 70, and 130, and a Highway Advisory Radio will also be advising motorists of the bridge closure.

Manual control cords will be installed on the traffic signals located on Atlantic Avenue at the base of I-676. NJSP will have dismantled posts at these signals.

Other Agency Support:

NJSP Troopers will cover two traffic signals on Atlantic Avenue, at the base of I-676.

Atlantic City Expressway needs to place 2 VMS towards the western end of the Expressway.

ALPINE VALLEY MUSIC THEATRE (WI) TRAVEL DEMAND MANAGEMENT STRATEGY FOR THE GRATEFUL DEAD – TERRAPIN STATION MUSIC FESTIVAL



YOUR QUESTIONS ANSWERED! TERRAPIN STATION Q&A

(East Troy – July 26, 2002)) Greetings from Alpine Valley! We are only a week away from one of the most anticipated concerts in our legendary history, Terrapin Station August 3 and 4. As preparation for this incredible event continues, we at Alpine would like to answer some very important questions from the fans. A great deal of this information is being released for the first time today, so please read carefully.

I don't have a ticket. How can I be part of this event?

Well, the first thing to do if you don't have a ticket is enjoy the show from somewhere other than Alpine Valley. As we know, the Grateful Dead folks have been very firm in reminding everyone not to come to the show without a ticket. You've seen letters from the band, you've heard announcements on the radio, and, if you were at one of numerous concerts around the country in the last two weeks, you were personally handed a flyer reiterating that message.

Given that very clear message from the band not to come to Alpine without a ticket, we have worked hard to find to ways for those without tickets to enjoy the show either by themselves or with friends and family.

How strict are the ticket checkpoints going to be at the show?

Every person will be required to have a ticket for that evening's show. Make sure everyone has his or her tickets before you leave for the theatre! The checkpoints will begin as you exit the interstate or approach the facility on the county road system. The right front seat passenger should have all the tickets and be ready to show them at various checkpoints on the way to the parking lot. Upon reaching the parking lot, the car will be stopped and the tickets will be validated. At this point any vehicle that does not have a ticket for each person in the car will be refused entry. Cars that comply will be issued a parking pass and allowed to enter the lots.

This process will be as mellow as we (and you!) can possibly make it. Nobody will be hassled and everybody will be treated courteously and respectfully. However, a large staff of Alpine Valley employees backed up by the county police will be checking each and every ticket very carefully.

What happens if someone in my vehicle decides to get out and walk into the facility?

No pedestrians will be allowed admittance. Spotters will be on the road to identify vehicles that have allowed individuals to get out and become pedestrians. When such a vehicle reaches the final checkpoint, it will be turned away and possibly ticketed.

Won't all of these measures slow traffic to a crawl?

We understand that traffic may be moving a bit slower than a typical show, but given the enormous staff that will be used for ticket verification, our expectation is that the delays will be minimal.

My friends and I will be arriving by bus. Who should hold our tickets and what do we do?

All buses and limousines will be directed to enter the facility via a special route identified by the police. Once the bus or limo has entered, a staff member will come to the vehicle and validate each ticket. If you are on a bus or in a limo, please hold onto your individual tickets. Anyone not having a valid ticket for that performance will be required to stay in the vehicle. If the vehicle has numerous people in it without tickets, the entire bus including fans with tickets may be refused entry to the property. Please make sure that everyone has their ticket prior to getting on the bus and the process should be a very simple once you arrived at Alpine.

The band recently said that additional shows would be added prior to the Alpine Show playing. Are these shows happening?

The band has announced, on a conditional basis, a tour for this fall. They have also stated very clearly that these dates will only play if all goes well at Alpine Valley. Basically, if Terrapin Station at Alpine Valley goes well, then The Other Ones will be able to take their magic around the country once again, bringing music and happiness to thousands of people. If it doesn't, they won't. Simple as that.

APPENDIX C
INTERAGENCY AGREEMENTS FOR SPECIAL EVENT PLANNING

ILLINOIS DOT AND ILLINOIS STATE POLICE
JOINT OPERATIONAL POLICY STATEMENT ON TRAFFIC SYSTEMS MANAGEMENT

ILLINOIS DEPARTMENT OF TRANSPORTATION

AND

ILLINOIS STATE POLICE

Joint Operational Policy Statement

Annex G: Traffic Systems Management

DEFINITION

Traffic Systems Management: Illinois Department of Transportation (IDOT) and Illinois State Police (ISP) share a mutual role in planning, organizing, implementing and controlling the movements of vehicular traffic using Illinois highways. The spectrum of Traffic Systems Management actions include improved safe vehicle flow, reduced peak period travel, preferential treatment of high occupancy vehicles, parking management, and transit system improvements.

OBJECTIVES

1. Maintain a close working relationship between agencies to ensure a continuing information flow on the various Traffic Systems Management elements. This requires a regular dialog at operational levels between IDOT and ISP Districts to exchange ideas and suggestions based on field experience. Past expressway projects in Chicago reflect the value of a close working relationship with ample opportunity to communicate. Special techniques must be developed for handling construction-impacted traffic by both the enforcement and highway agencies based on a mutual concern for safe traffic movement.
2. Mutually develop inter-agency traffic management teams to preplan responses and procedures for handling all major traffic incidents, events and activities.
3. Plan for accident investigation sites and procedures to reduce impacts of law enforcement reconstruction on traffic flow.
4. Concentrate on efforts making Illinois Department of Transportation and Illinois State Police personnel "traffic sensitive" to the consequences of their actions in incident management, work zone establishment, vehicle relocation/removal, and truck incident handling. When problems arise, appropriate IDOT personnel should contract the appropriate ISP command officer.
5. Establish clear communications lines between agencies for mutual notification of accidents and/or incidents.
6. Provide agency linkages for electronic traffic information exchange by use of computers, television, telephones and other means to assist multi-agency operations as well as public information dissemination.
7. Meet regularly to establish operational policies, incident management techniques, and plan major highway improvement project impact assessments as well as congestion investigation measures.
8. Encourage attendance at training seminars, enforcement/engineering conferences and provide other educational opportunities to increase Traffic Systems Management knowledge and provide for engineering and enforcement viewpoint interchange.
9. Explore all funding opportunities to support enforcement on the highway patrol efforts.

WASHINGTON STATE PATROL AND WASHINGTON STATE DOT
JOINT OPERATIONS POLICY STATEMENT ON EVENT PLANNING

E. Event Planning

Policy: Periodically, events are held on state highways or on WSF ferries by municipalities or other organizations or private entities. It is the policy to allow such events on non-limited access facilities provided that the transportation effects of the event are well publicized and a traffic control strategy is developed by the event organizer and approved in advance.

Roles: WSDOT Headquarters Traffic Operations Office, WSF Operations Center, and Region Traffic Engineers' Offices approve events with coordination with state and local law enforcement, allowing for adequate public communications lead-time. WSP is often asked by event organizers to provide police services during events at the expense of the event organizer.

Reference: *Traffic Manual*, Chapter 7; MOU with WSP for special events/filming.

APPENDIX D

2003 FAIR SAINT LOUIS EVENT PATRON SURVEY

The Great American Celebration on the Saint Louis Riverfront July 3, 4, 5, 2003
2003 A Salute to Freedom

Home

Things to Do [Home](#) [Survey](#)

Things to See

About the Fair

Latest News

Schedule

Map

Fair Survey

Barbecue Fest

Volunteer Registration

Powered By

We are collecting information about Fair Saint Louis. Your answers are very important and will be used to help plan future Fairs.

How do you usually receive information about Fair Saint Louis? (Choose one)

Have you ever previously attended Fair Saint Louis (or the VP Fair)? (Choose one)

How many days do you usually attend Fair Saint Louis? (Choose one)

Besides yourself, how many other people did you attend the Fair with? (Choose one)

How do you travel to the Fair? (Choose one)

How much money do you typically spend on a single visit to the Fair? (Choose one)

On a scale of 1 to 6 (1 = not important to 6 = very important) how important is each of these factors in your decision to attend the Fair?

Fireworks 1 2 3 4 5 6

Air Shows 1 2 3 4 5 6

To see a specific performer or concert 1 2 3 4 5 6

A fun activity with family and friends 1 2 3 4 5 6

Came to the Fair from out of town as a vacation 1 2 3 4 5 6

Educational exhibits 1 2 3 4 5 6

Food Court (exotic foods) 1 2 3 4 5 6

How likely are you to notice advertising/sponsor signs on the Fairgrounds? (Choose one)

What is your age? (Choose one)

What is your gender? (Choose one)

What is your marital status? (Choose one)

How many children under the age of 18 live in your household? (Choose one)

Which of the following best describes your highest level of education completed? (Choose one)

Which of the following best describes your occupation? (Choose one)

Which of the following best describes your annual household income (combined income of you and your spouse/partner)? (Choose one)

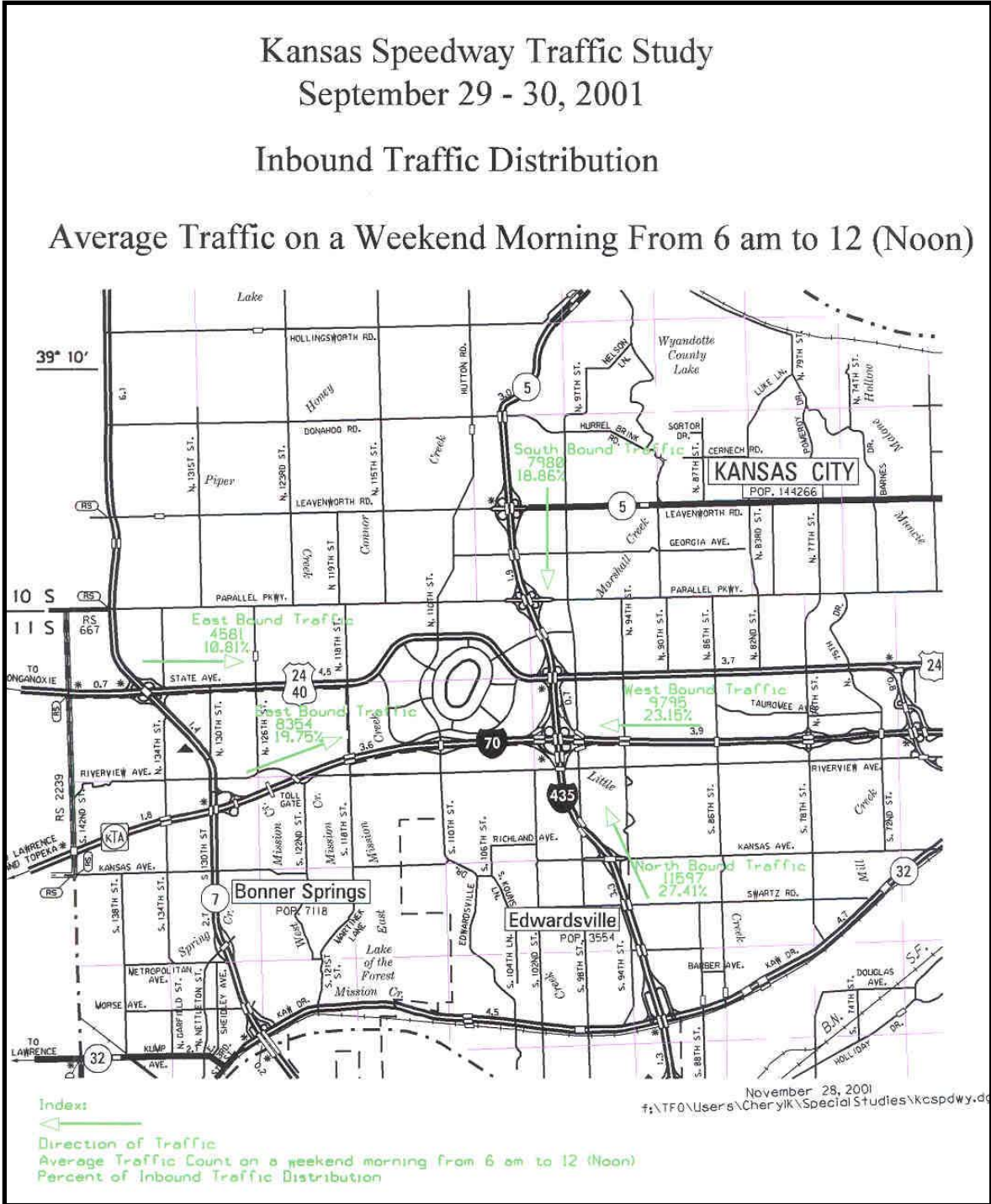
What is your ZIP code?

Comments?
(Replies will be read after the Fair)

[Home](#) | [Things to Do](#) | [Things to See](#)
[About the Fair](#) | [Latest News](#) | [Schedule](#) | [Map](#)

Source: www.fairstl.org

**APPENDIX E
REGIONAL DIRECTIONAL DISTRIBUTION FOR 2001 NASCAR KANSAS 400**



Source: Reference 20 (Chapter 5)

APPENDIX F PARKING AND PEDESTRIAN ACCOMMODATION PLANS LAMBEAU FIELD RECONSTRUCTION

The screenshot shows the Packers.com website in a Microsoft Internet Explorer browser window. The main content area features a 'Construction Alert' box with the following text:

Construction Alert

- For everyone's safety, it is extremely important that you use the stadium entrance indicated on your ticket. (A, B, C or D)
- Please observe informational signs located around Lambeau Field which will direct you to the proper stadium entrance.
- You will be required to exit the same gate entered.
- Allow extra time to enter Lambeau Field and pass this information on to anyone using your season tickets.

The background of the website includes a navigation menu on the left, a 'Packers.com Photo Galleries' section, a 'TRAINING CAMP 2002' banner, and a 'Packers 2002 Schedule' table.

Date	Team	Time	TV
09/08		Noon	FOX
09/15		Noon	FOX
09/22		3:15 pm	FOX
09/29		Noon	FOX
10/07		8 pm	ABC
10/13		Noon	FOX
10/20		3:15 pm	FOX
10/27		Open Date	
11/04		8 pm	ABC
11/10		Noon	FOX
11/17		Noon	FOX
11/24		Noon	FOX
12/01		Noon	FOX
12/08		7:30 pm	ESPN
12/15		3:15 pm	FOX
12/22		Noon	CBS
12/29		3:15 pm	FOX

Source: www.packers.com

Packer Parking and Game Day Shuttle

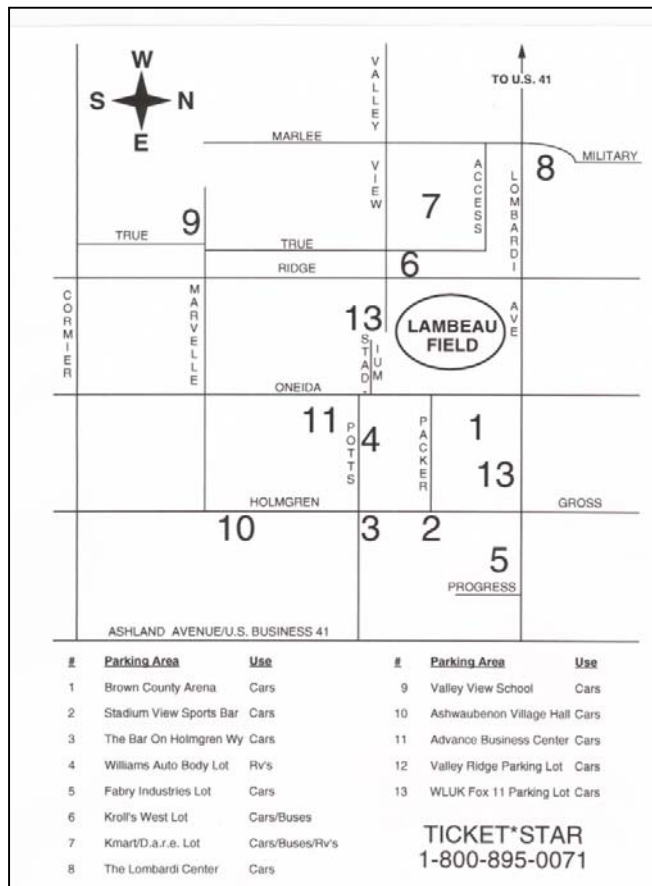
In order to alleviate the inconvenience of game day parking for Packers fans due to the Lambeau Field renovation project and to head off severe traffic congestion, the **Packer Parking and Game Day Shuttle** program is being put into service.

Although the Green Bay Packers do not receive revenue from this service, nor is the team responsible for off-site parking issues, they are cooperating with this program to help fans with the parking situation during the construction.

The current Lambeau Field parking lot is going to be approximately 3,000 parking spaces short of previous years totals, and general car parking, bus parking and RV parking will be eliminated on game days for the next two seasons. In order to organize the parking and traffic flow of vehicles coming to the games, parking areas have been identified and organized for incoming fans use and convenience.

Ticket*Star will act as the clearing house for these convenient spaces located adjacent to Lambeau Field. **It is highly recommended by local police and traffic authorities that you secure your parking spaces in advance to avoid confusion and traffic congestion problems on game days. Parts of Oneida Street and Ridge Road will be closed on game days so normal traffic flows will be affected.** All car, bus and RV drivers can now call Ticket*Star at 1-800-895-0071 starting Monday, July 16 at 10:00 a.m. to order parking passes by the game or for the season. Ticket*Star has prime parking spaces available at lots including the Brown County Veterans Memorial Arena, Kroll's West, Stadium View Sports Bar and Grill, Kmart/D.A.R.E. lot, The Bar on Holmgren Way, Valley View School, Fabry Industries, the Lombardi Center and others. Along with your parking pass, advance orders will receive a map and directions, coordinated through police and traffic officials, detailing the easiest route to your parking lot. Although all lots are within easy walking distance of Lambeau Field, shuttles will be available at selected lots.

DO NOT WAIT UNTIL GAME DAY TO SECURE PARKING! Make your Packers game day experience a pleasant and well-planned event. Avoid the stress of finding parking and the hassle of traffic congestion by calling Ticket*Star today. Parking spaces are limited and available on a first-come first-served basis. Prices and tailgating activities vary depending on location and use.



APPENDIX G
WISCONSIN DOT ORGANIZATION AND DISSEMINATION OF
INTER-JURISDICTIONAL ROAD CONSTRUCTION AND
PLANNED SPECIAL EVENT INFORMATION

Summertime in Milwaukee is always busy, with entertainment venues of all kinds. Summertime is also the season for road construction, and sometimes the two interfere with each other. **This summer, Milwaukee will be hosting the All-Star baseball game and festivities at Miller Park. The annual celebration of baseball will be held on July 9, 2002 and will feature a full week of activities surrounding the All Star Game.** When all of the Fourth of July activities, the Circus Parade, and other entertainment in these few weeks are added up, there is a lot to plan for to keep visitors and residents moving during their travels to and from events.

This letter is being sent to various municipalities who may have road construction, street lane closures, or other work that is traffic related and will have an impact on the traveling public. Due to the extra volumes of traffic, it is important for all jurisdictions to work together and share information regarding the road construction. **If your city or district has any type of road construction happening during the end of June, 2002 extending in to the beginning of July, 2002, please enclose the following information for each construction event and mail it in the enclosed envelope:**

- City and Street Location of work
- Time of work and number of lanes closed
- Type of work
- Contact Person Name, Desk Phone, Mobile Phone, Fax, Email
- Any additional Information that is necessary for the project description

You may also fax your construction information to 414 227-2164. Please mark them Attention: Lisa. Your prompt attention to this letter is greatly appreciated!

Thank you, and best wishes for a safe and happy 2002:

Milwaukee area events and projects in summer 2002



WisDOT and local projects affecting traffic:

- I-43 - Lexington Blvd. to North Ave (3.5 miles)**
No closures are scheduled between June 27 and July 10.
- I-43 - National Ave. to Mitchell Interchange (4.9 miles)**
One lane will be closed in both directions for about two miles between the Mitchell Interchange and Oklahoma Avenue. Also closed will be the northbound on-ramp at College Avenue and the two northbound on-ramps at Layton Ave.
- 6th St. Viaduct** - closed to traffic
- Park East Freeway** - restricted
- N. 16th St.** - W. Clybourn St. to W. Wisconsin Ave.
- W. Wisconsin Ave.** - N. 11th St. to N. 20th St.
- N. 12th St.** - W. Wisconsin Ave. to Highland Ave.

APPENDIX H
EXAMPLE SITE AND PARKING MAPS

LAS VEGAS MOTOR SPEEDWAY



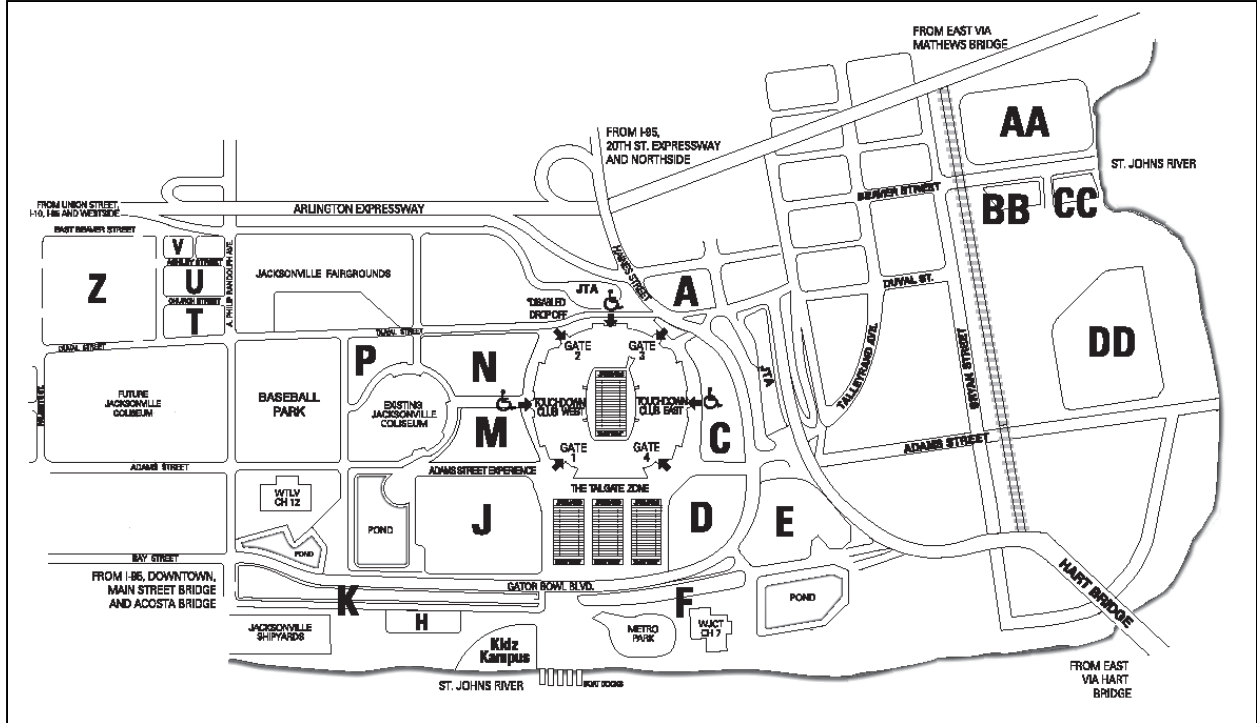
Source: www.lvms.com

BRISTOL (TN) MOTOR SPEEDWAY



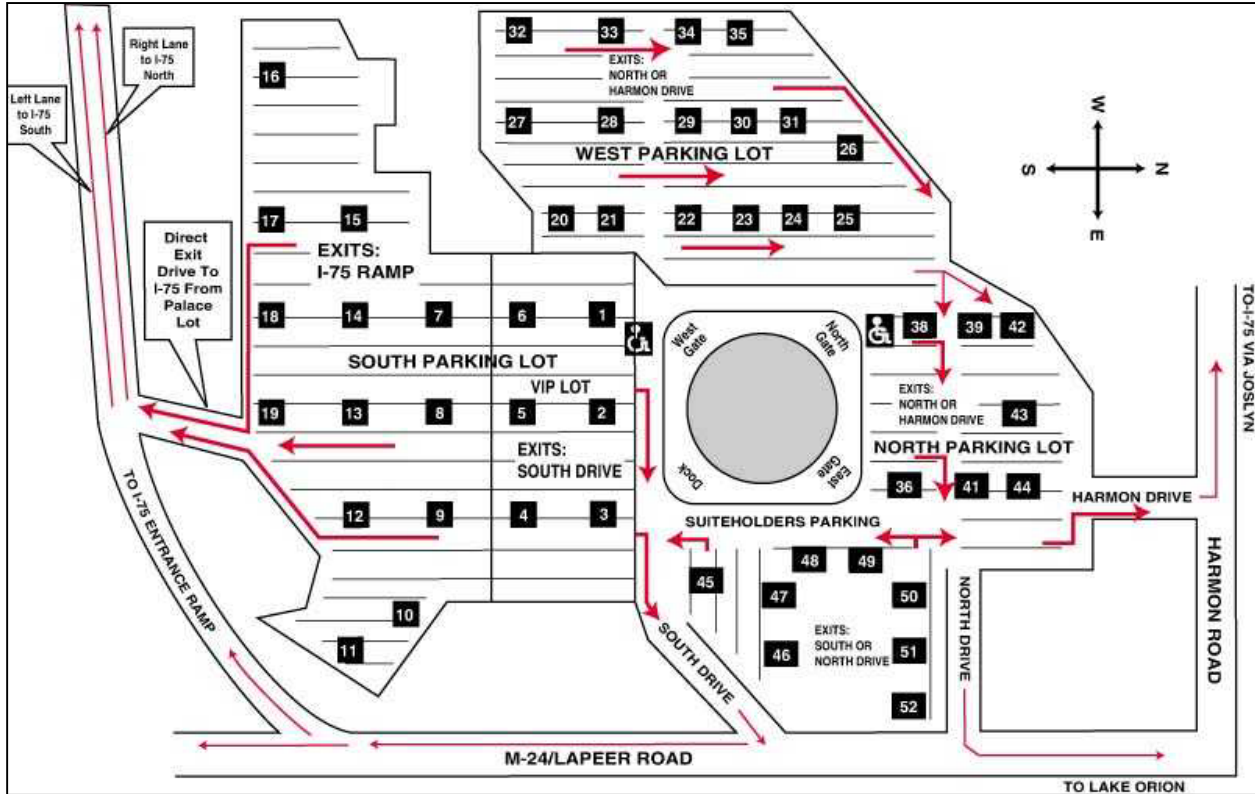
Source: www.bristolmotorspeedway.com

JACKSONVILLE (FL) JAGUARS NFL FOOTBALL GAMES



Source: www.jaguars.com

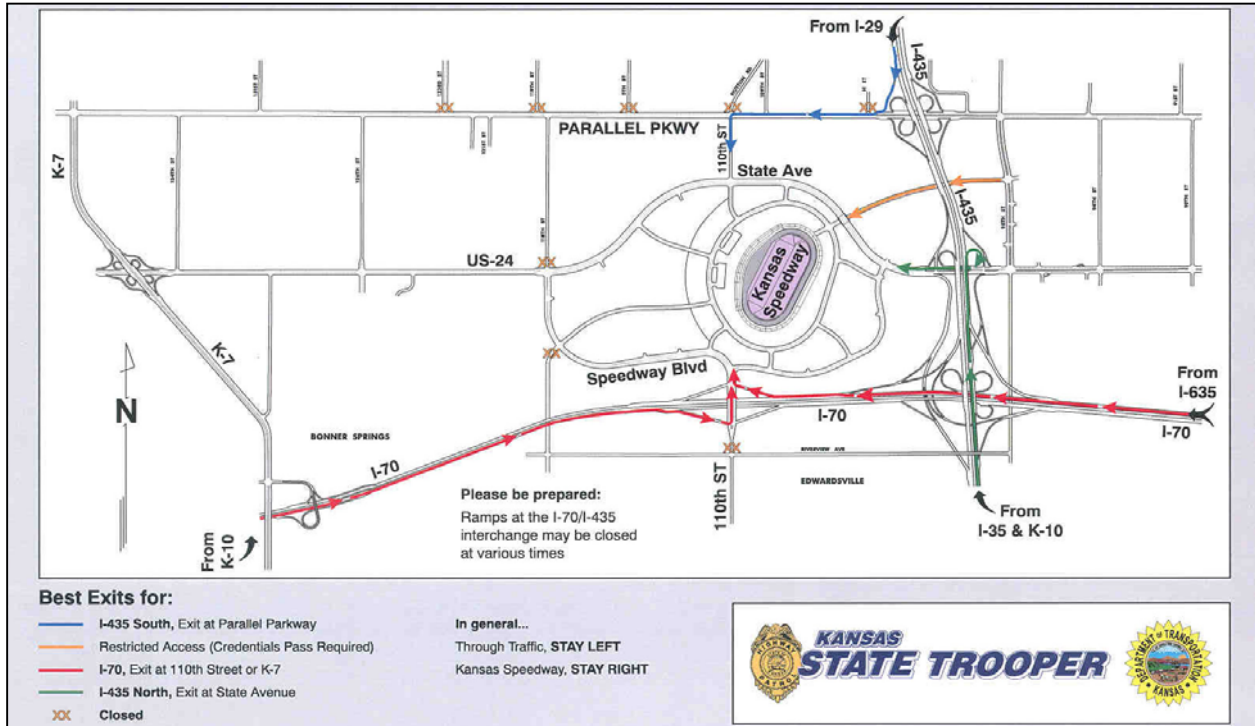
PALACE OF AUBURN HILLS (MI)
PARKING EGRESS MAP



Source: www.palacenet.com

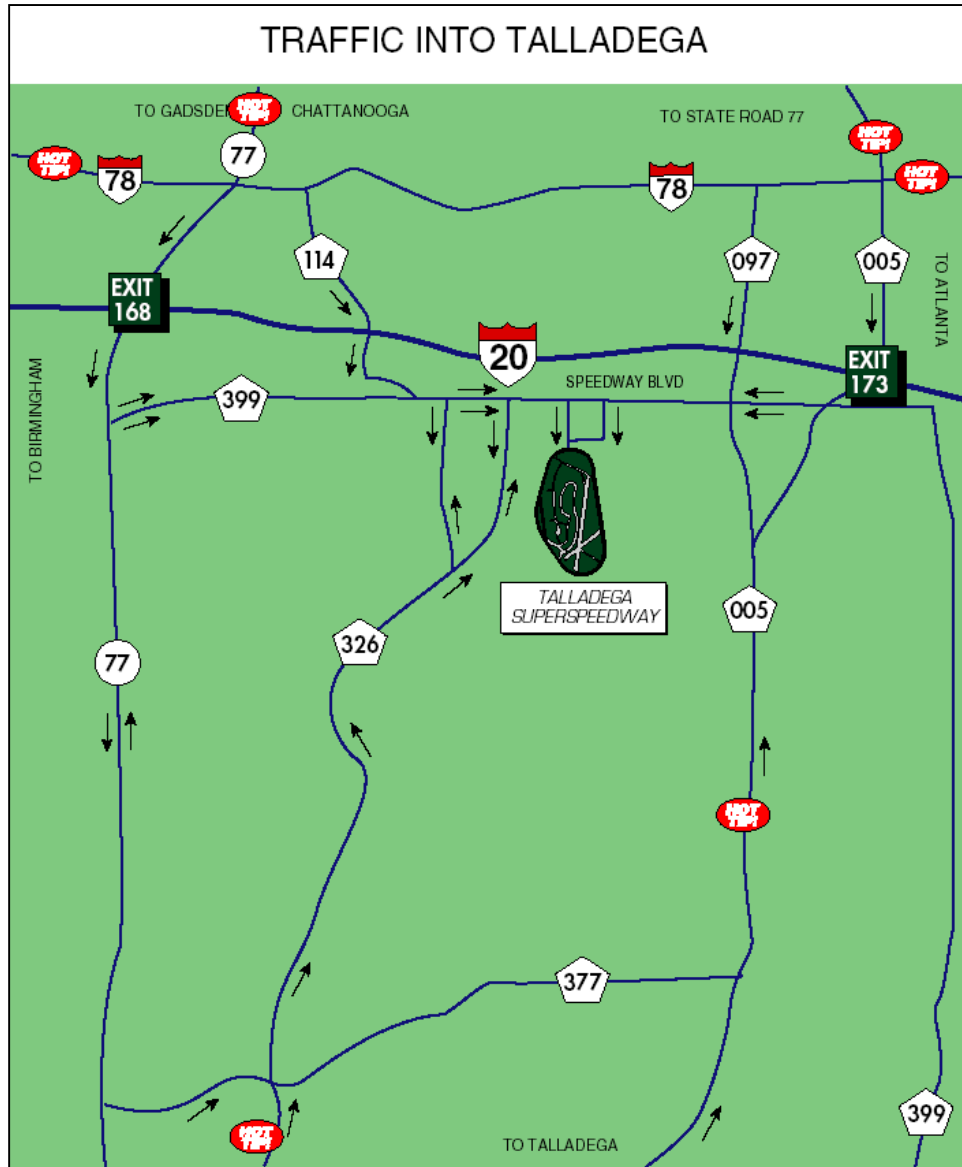
APPENDIX I EXAMPLE TRAFFIC FLOW MAPS

NASCAR KANSAS 400



Source: Reference 15 (Chapter 6)

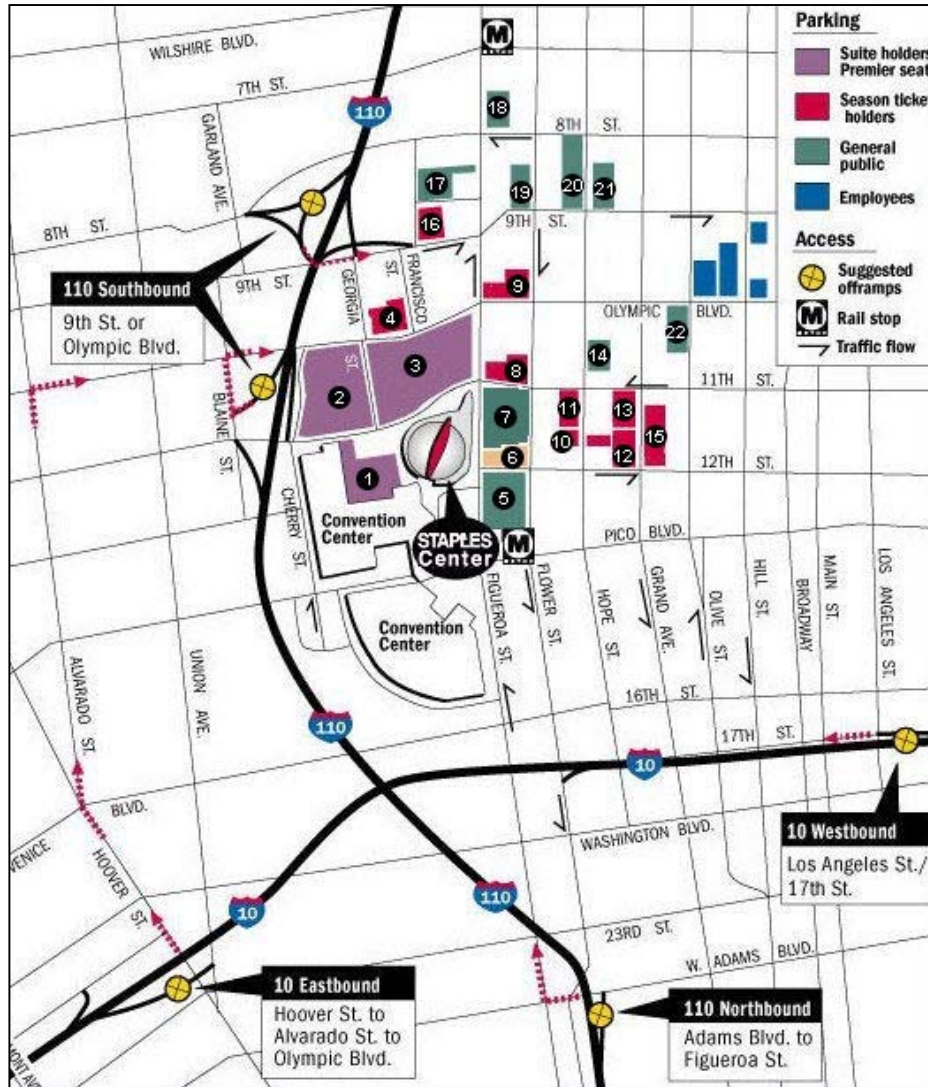
TALLADEGA (AL) SUPERSPEEDWAY



Note: "Hot Tip" indicates route not usually congested during event ingress.

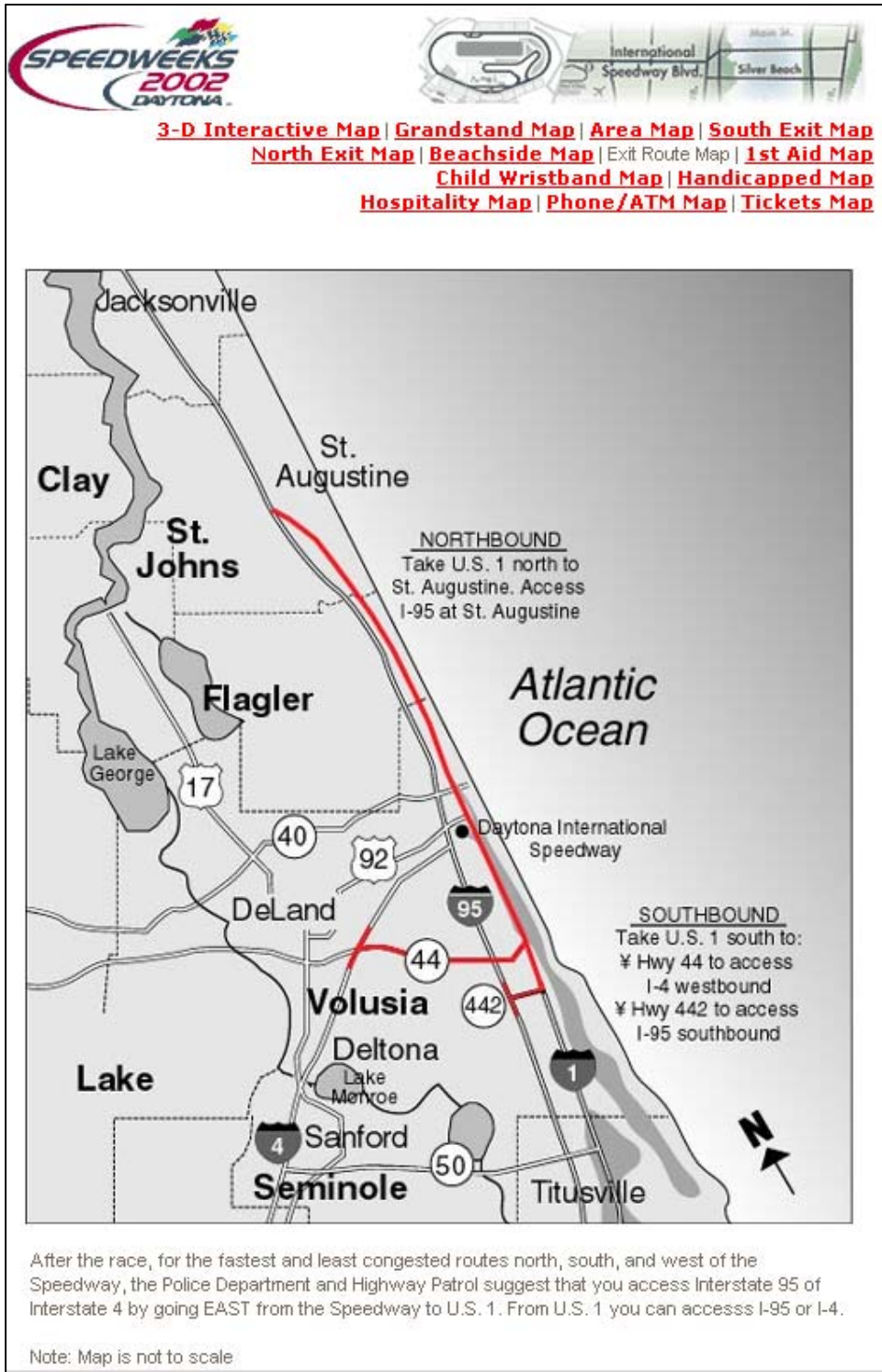
Source: www.talladegasuperspeedway.com

STAPLES CENTER – LOS ANGELES, CA



Source: www.staplescenter.com

NASCAR DAYTONA 500



Source: www.daytona500.com

MICHIGAN INTERNATIONAL SPEEDWAY

Inbound Traffic: Sunday Only

Pattern goes into effect - 6:00 a.m.

Outbound Traffic: Sunday Only

Pattern goes into effect with 50 laps remaining

M-50
SOUTHBOUND: M-50 will become two lanes south of Vandyke's Lake Rd. (M-124). All M-50 traffic will enter the M-50 Gate and use the east side parking lots. Race traffic will not be allowed to continue southbound past the M-50 entrance.

NORTHBOUND: M-50 traffic will be directed west on to U.S. 12 and must use Gate 8. Race traffic will not be allowed to continue northbound on M-50 past U.S. 12.

U.S. 127
SOUTHBOUND: Race traffic will be directed east onto Vandyke Taylor Rd. with the exception of guests with parking credentials and charter buses. **Credential holders and charter buses will proceed to U.S. 12 eastbound.**

NORTHBOUND: Traffic north on U.S. 127 will use U.S. 12 eastbound to enter the track.

U.S. 12
WESTBOUND: U.S. 12 will become one-way at M-50. Use all lanes. All westbound U.S. 12 traffic will be directed in to Gate 8. Those with parking credentials will be directed to their designated parking areas. Those needing to pick-up credentials will be directed to the credential office.

EASTBOUND: U.S. 12 eastbound will be one-way from U.S. 127 to the Speedway. Two lanes start at U.S. 127, and three lanes start at Round Lake Hwy. The left lane will enter Gate 11, the right lane will enter Gate 10. **The center lane is for credential parking only. Those needing to pick up credentials at the credential office should enter through Gate 10.**

M-50 GATE
All traffic leaving the M-50 gate will be directed north on M-50. At the intersection of M-50 and Monroe Pike, the right lane will follow Monroe Pike north. **(Monroe Pike is a two-way street.)** The left lane will follow M-50 north through Brooklyn. Signs will direct you to 194.

GATE 8
Use both lanes when exiting Gate 8. All traffic leaving Gate 9 will be directed eastbound on U.S. 12, which will be one-way. The two lanes will merge to one shortly after M-50. To head west, turn right on Onsted Hwy. And use westbound Z28 (see map on next page).

GATE 9, GATE 101 MAIN GATE
All traffic leaving Gate 9, Gate 101 and the Main Gate will be directed east on U.S. 12 and will turn right (south) on M-50. To head west, turn right on Onsted Hwy. And use westbound U.S. Z28.

GATE 1, GATE 2, GATE 10, GATE 11, TUNNEL GATE
All traffic exiting gates 1, 2, 10, and the Tunnel will be directed south on Brooklyn Hwy. to U.S. 12, where they will be directed westbound. Vehicles exiting Gate 11 will be directed west on U.S. 12. To head East, turn left at Round Lake Hwy., and use U.S. Z28 east (see map on next page). All remaining traffic should follow U.S. 12.

GATE 3
Traffic leaving Gate 3 will use Vandyke Taylor Rd. west to U.S. 127. As U.S. 12 clears, some traffic may be sent south on Brooklyn Hwy. to westbound U.S. 12.

GATE 4
One lane exiting southbound on Brooklyn Hwy. to Vandyke Taylor Road westbound to U.S. 127. As traffic on M-50 clears, one lane may be sent northbound on Brooklyn Hwy. to M-50.

GATE 121
North on Brooklyn Hwy. to M-50 and north through Brooklyn.

Map NOT drawn to scale.

Overhaul parking will be used only if necessary

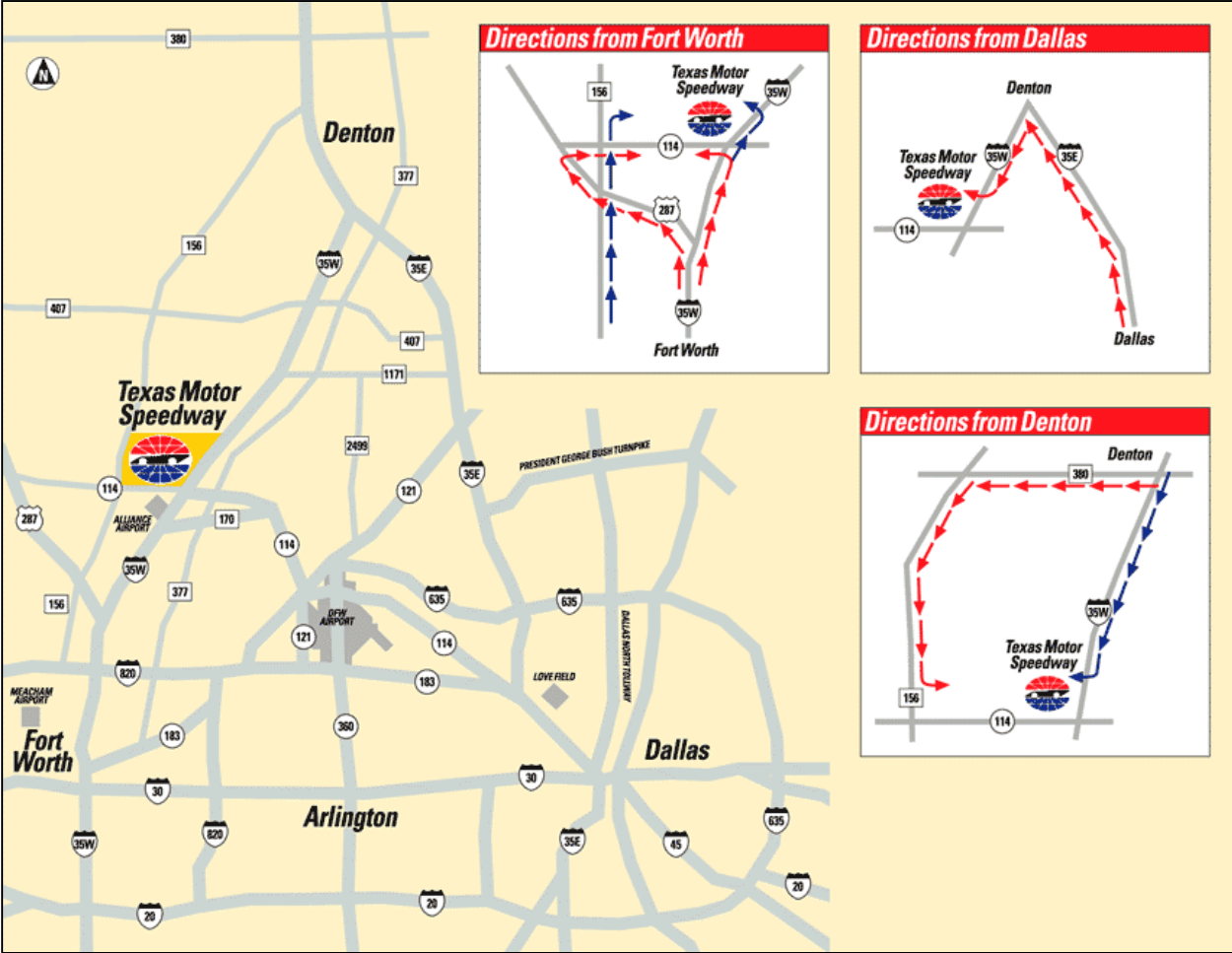
Map NOT drawn to scale.

Overhaul parking will be used only if necessary

TRAFFIC PATTERNS ARE SUBJECT TO CHANGE

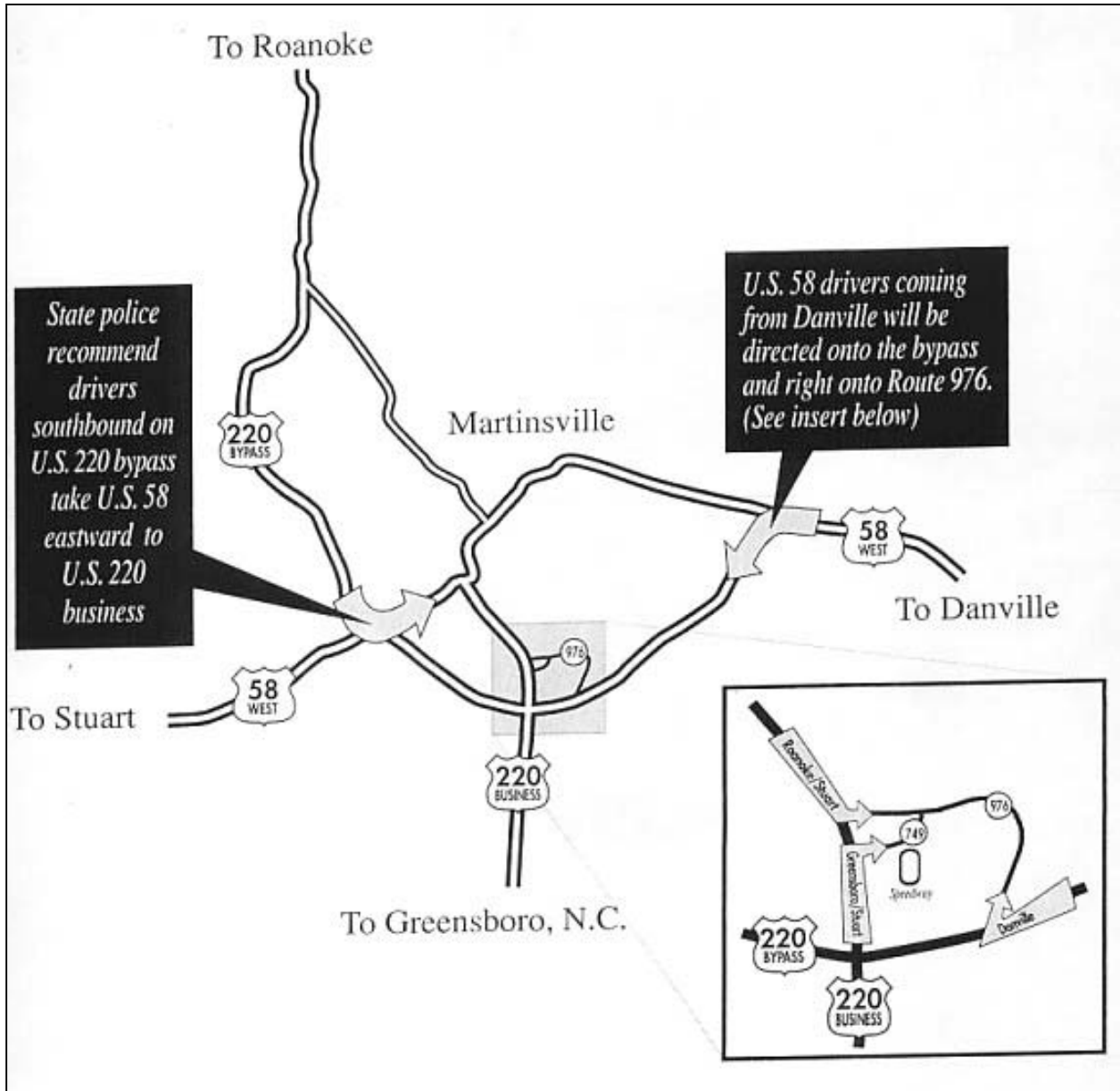
Source: www.mispeedway.com

TEXAS MOTOR SPEEDWAY



Source: www.texasmotorspeedway.com

MARTINSVILLE (VA) SPEEDWAY



Source: www.martinsvillespeedway.com

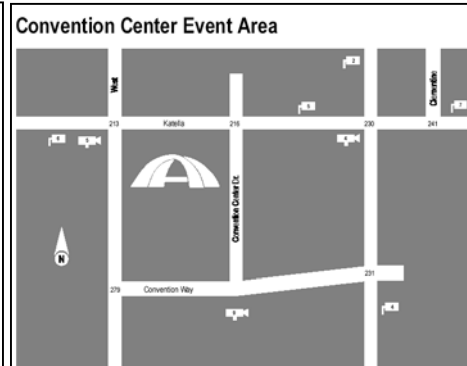
APPENDIX J EXAMPLE PROTOCOL FOR PLANNED SPECIAL EVENT TRAFFIC SIGNAL SYSTEM OPERATIONS

ANAHEIM, CA

CONVENTION CENTER INBOUND

1. Bring up DISNEYLAND map by clicking the mouse's left button at the Disneyland icon on CITYWEST map or by hitting ALT and G keys simultaneously, and at the blue bar, type DLAND.
2. Sign on to the terminal with your MTM'S USER NAME and PASSWORD.
3. Type \$MM to get the MASTER MENU and sign with your USER NAME and PASSWORD.
4. Check the timing plan schedule and if you think it will interfere with your operation, put section to OPERATOR mode.
5. Turn the cameras to watch for traffic:

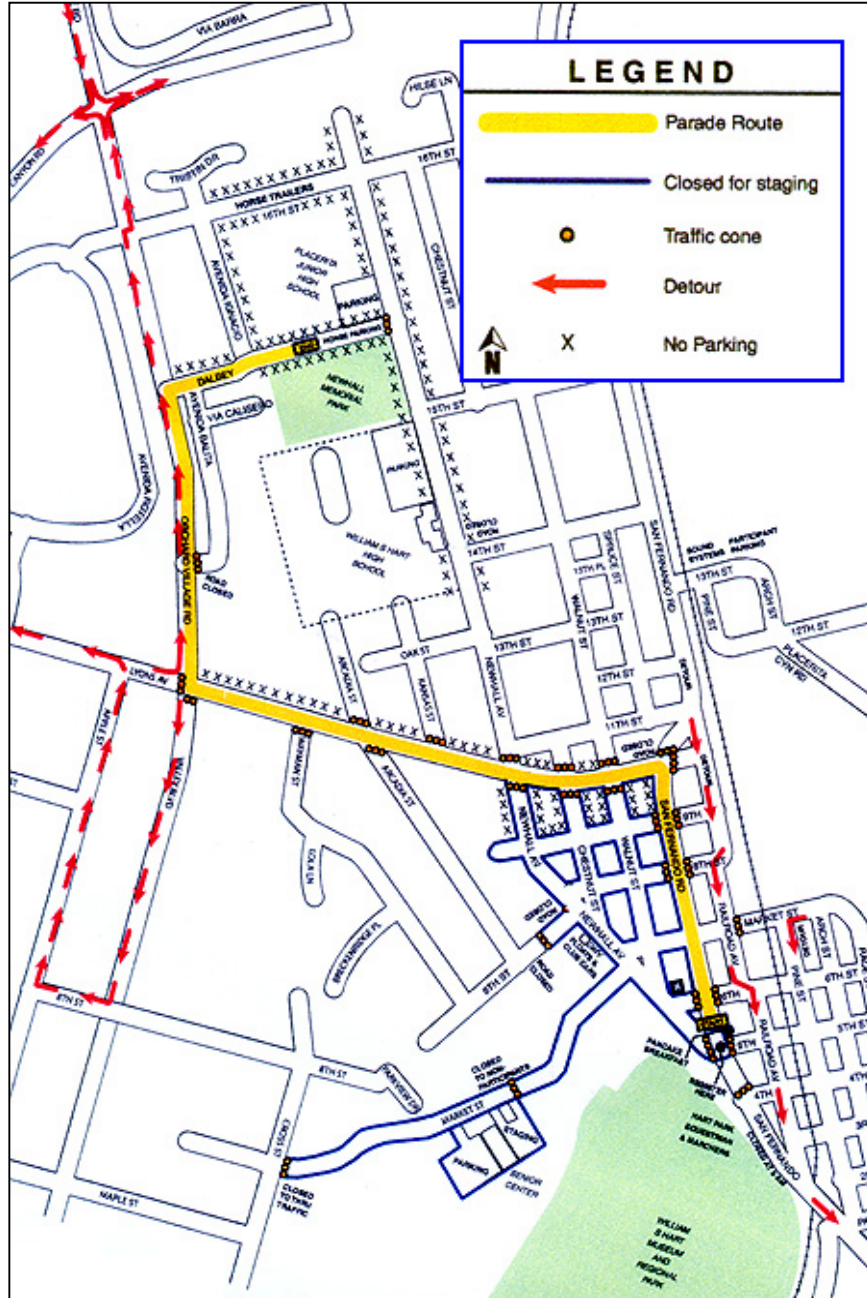
Camera #:	Location	Watching Traffic Traveling:
Camera 4:	Harbor & Katella	Westbound at CC Kat. Ent.
Camera 5:	Katella & West	Southbound or Westbound
Camera 9:	Conv Wav on Marriot	Westbound from Harbor
6. Pick up the following timing plan, as needed, if needed:
 - 17 (120 sec cycle)
 - 18 (140 sec cycle)
 - 19 (160 sec cycle)
 - 20 (180 sec cycle)
 - 21 (200 sec cycle)
 - 22 (220 sec cycle)
7. When traffic is over and if you did put section 7 in OPERATOR MODE earlier, now you have to put the section back to TOD MODE. Due to a bug in the system, after putting the section back to TOD MODE, you need to drop the section. Make sure they are all dropped by checking their status color (should be all dark blue). Now you can put the section back to the original plan that was scheduled. If it is supposed to be in STANDBY MODE, just leave the section in standby (dark blue).



Source: Reference 19 (Chapter 6)

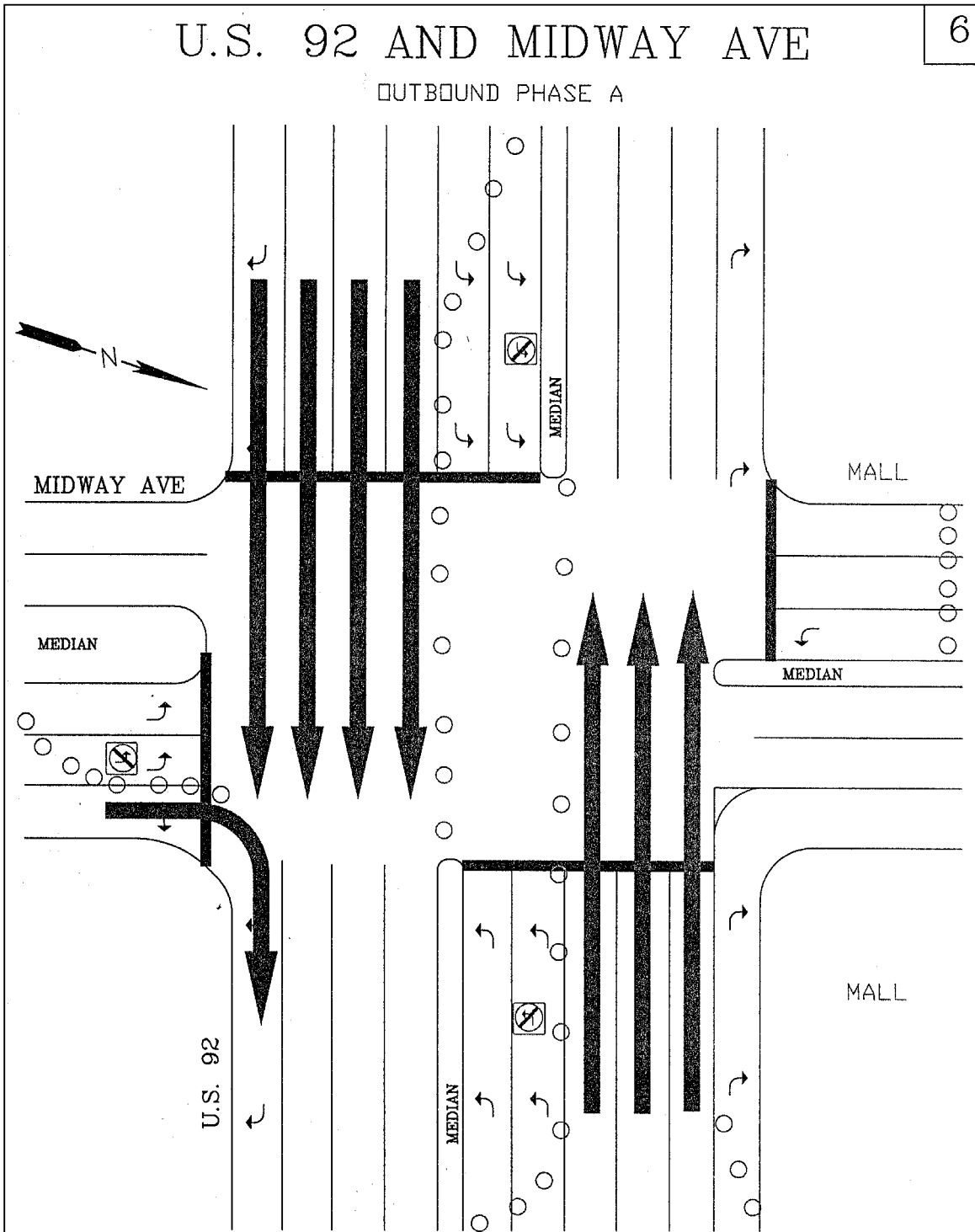
**APPENDIX K
EXAMPLE TRAFFIC CONTROL PLANS**

**STREET CONTROL PLAN
SANTA CLARITA (CA) 4TH OF JULY PARADE**



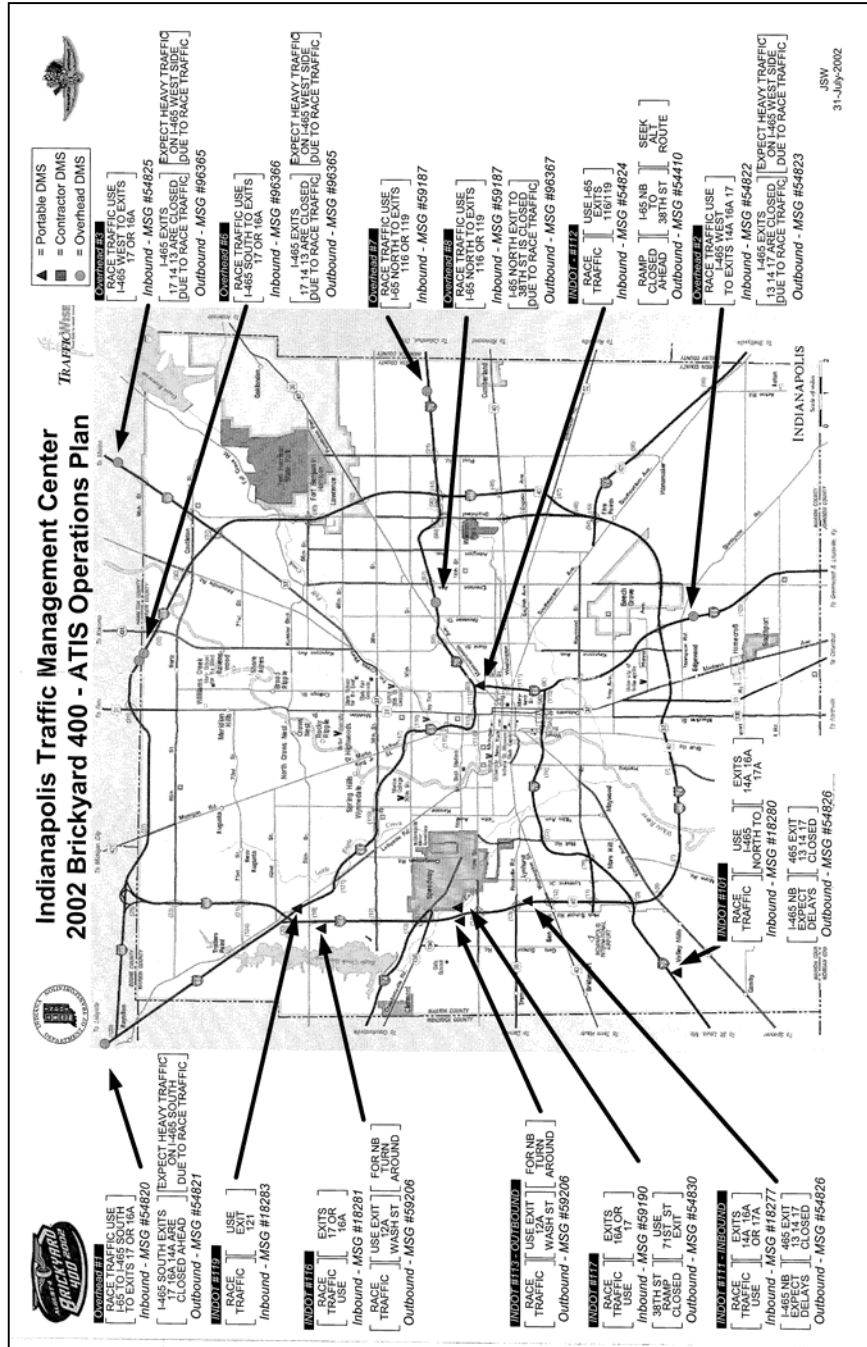
Source: www.scvleon.com/parade/

INTERSECTION CONTROL PLAN
DAYTONA (FL) SPEEDWEEKS



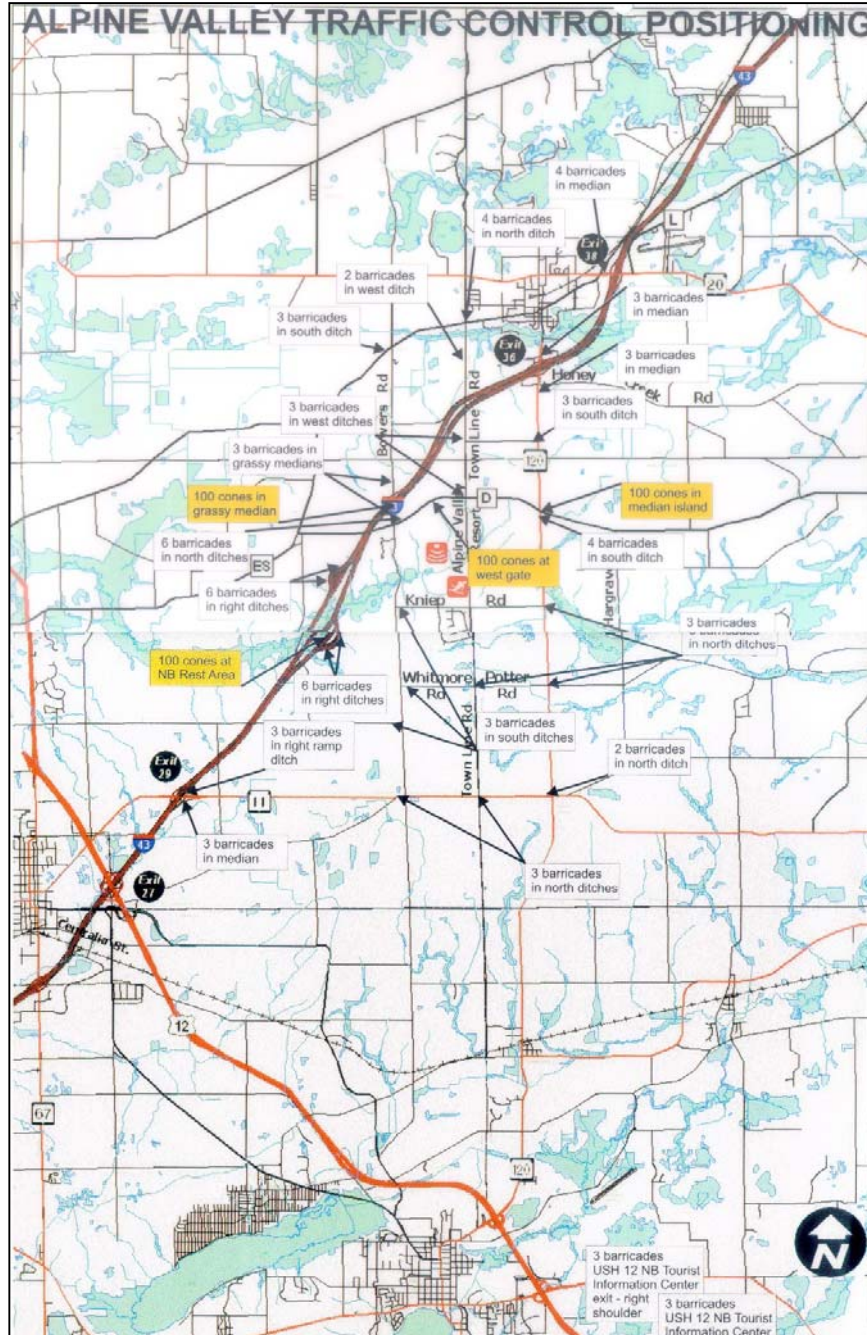
Source: Reference 18 (Chapter 6)

FREEWAY SIGNING PLAN NASCAR BRICKYARD 400 – SPEEDWAY, IN



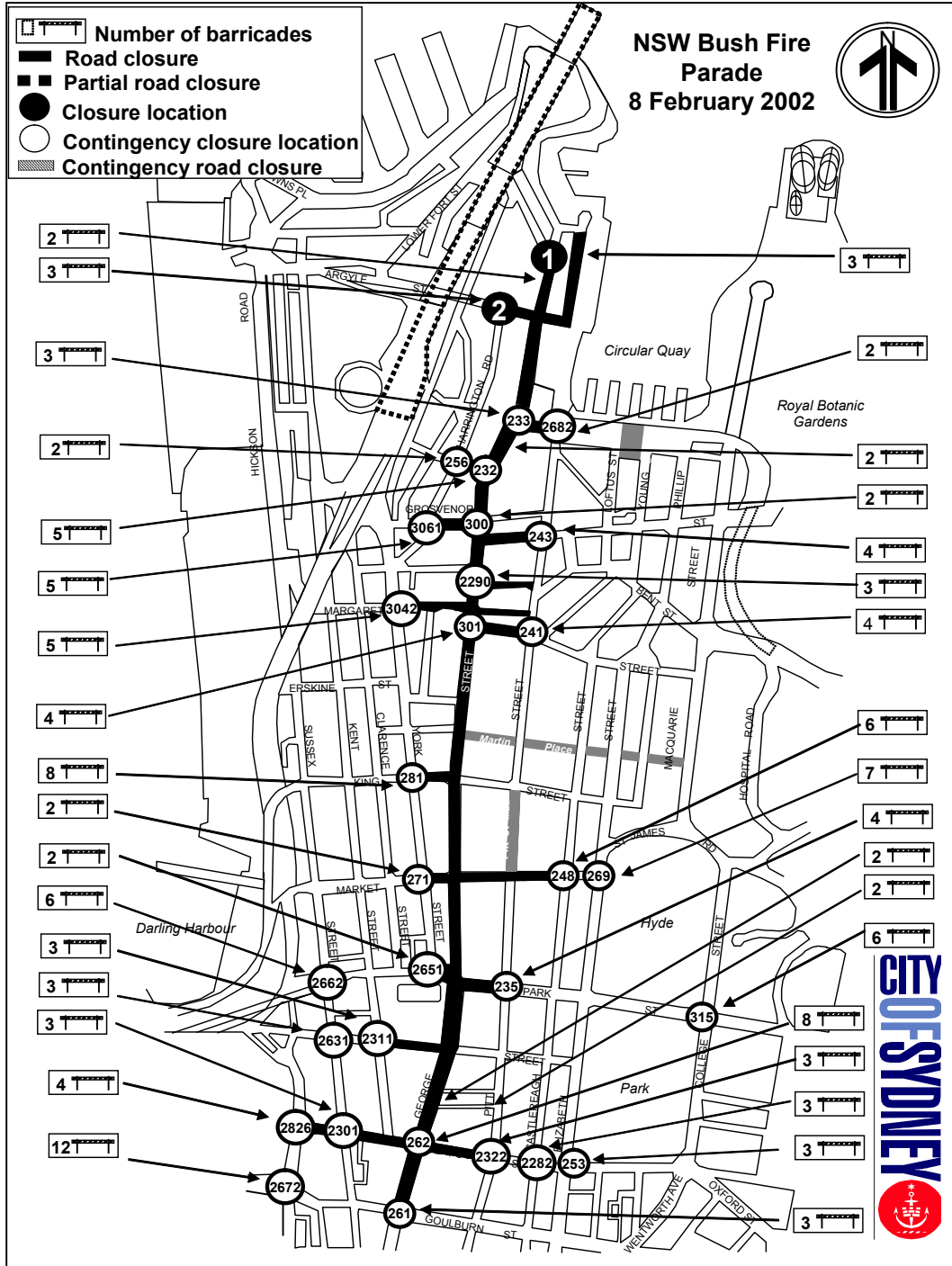
Source: Indiana DOT

EQUIPMENT LOCATION PLAN ALPINE VALLEY (WI) CONCERT EVENT



Source: Wisconsin DOT

EQUIPMENT LOCATION PLAN SYDNEY, AUSTRALIA PARADE



Source: Reference 20 (Chapter 6)

APPENDIX L PUBLIC AGENCY AND EVENT-SPECIFIC WEBSITES

DAYTONA BEACH (FL) POLICE DEPARTMENT

The Daytona Beach Police Department - Special Events - Safety & Security - Microsoft Internet Explorer

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Links Address http://www.d.daytona-beach.fl.us/police/special_events_safety_security.htm Go

Search Site Map

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Police Department

City Home Page

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Police Department Menu

[A Message From The Chief](#)
[Patrol Division](#)
[Criminal Investigation Division](#)
[Special Services Division](#)
[Special Events](#)
[Registered Sexual Predators](#)
[Important Phone Numbers](#)
[Employment Opportunities](#)

**Special Events
Safety & Security**

Daytona Beach Area Residents and Visitors:

As the 2002 Special Events Season approaches, it brings with it a heightened level of public safety concern and awareness in light of the events of September 11th. Our world has changed in such a way that we must implement new safety and security procedures during events that draw large groups of people to our community. I would like to take this opportunity to explain some of the changes to safety and security procedures, so that people attending the events will not be surprised or alarmed by what they see.

First, the presence of uniformed law enforcement may be increased. Their visibility will be coupled with the noticeable change in the types of tools and weapons carried by some of these personnel.

Second, there is a likelihood that searches will be conducted of vehicles attempting to access locations where significant groups of people are gathered. These searches may include the utilization of K-9's and scanning or sensor equipment to detect weapons, explosive devices or other dangerous items.

Third, people attending large events should anticipate bags and cases will be thoroughly searched prior to entry into the designated event venue. Certain items, such as large ice chests, will not be allowed. People arriving at event venues with prohibited items will be responsible for disposal or safekeeping of the items.

It should be expected that implementation of these measures may slow down the process of getting large groups of people into event venues before the event begins. Therefore, now, more than ever before, it is important that spectators arrive early and be prepared. This preparation includes familiarizing yourself with the rules governing the event venue and items which will not be allowed into the event. Preparation also includes becoming familiar with traffic patterns and Park-N-Ride opportunities. As in years past, local media outlets and event sponsors will disseminate this information well in advance of the event.

Effective February 4, 2002 a telephone line will be made available to allow persons to call and listen to a pre-recorded message addressing traffic and safety concerns. The number to call to access this message will be (386) 671-5125. Additionally, a hotline will be activated which can be used to report suspicious activity. This hotline will be monitored and the information passed on to an investigator for possible follow-up. The hotline number will be (386) 671-5227. This line is not intended to replace the Emergency 911 phone number.

The first priority of the Daytona Beach Police Department is your safety. Unfortunately, the implementation of increased security measures sometimes results in a loss of convenience. For this we apologize. However, creating an environment that allows you and your family the ability to enjoy yourselves, while minimizing fear and concern about security is our primary focus.

We wish you and your family an enjoyable experience and we stand ready to protect and serve because we are "Committed to our Community."

The following links will provide detailed information for the specific event:

[JULY 2002 FOURTH FIREWORKS](#)
July 4, 2002

[PEPSI 400](#)
July 6, 2002

The Daytona Beach Police Department - Public Information - Latest News Release - Microsoft Internet Explorer

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Address http://www.ci.daytona-beach.fl.us/police/06_19_02_1.htm

Links



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Police Home Page


Police Department Menu

A Message From The Chief
 Patrol Division
 Criminal Investigation Division
 Special Services Division
 Special Events
 Registered Sexual Predators
 Important Phone Numbers
 Employment Opportunities

BACK TO PUBLIC INFORMATION

PRESS RELEASE LISTINGS

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Daytona Beach Police Department

PUBLIC SERVICE ANNOUNCEMENT

RE: The 2002 Fourth of July Fireworks Display
TIME: 9:00 PM on Thursday, July 4, 2002

The 2002 Fourth of July Fireworks Display will be held just off the Main Street Pier at 9:00 PM on Thursday, July 4, 2002. The display is scheduled to last approximately 25 minutes and will be fired over the ocean.

PEAK EVENT TIMES

Pre-Event: 7:00 PM – 9:00 PM
 Post-Event: 9:30 PM – 10:30 PM

PARKING

Spectators wishing to watch the display will be directed to the parking lots located west of the Ocean Center. Other available lots include the parking garage on Ora St. just west of Atlantic Ave. and other lots located in the 00 Blocks of South Coates Street and South Wild Olive Avenue. There will also be parking available around the Seabreeze Blvd area.

TRAFFIC FLOW

Traffic patterns shall be in place after the event in order to more effectively manage the outbound flow of traffic.

Those spectators parked in the area *south of Main Street* will be encouraged to utilize the International Speedway Boulevard Bridge to access the mainland.

Those who are parked in the area of *Auditorium Boulevard* will be guided to the International Speedway Bridge.

Those parked in the area *north of Earl Street* will be directed to the Seabreeze Bridge.

Those spectators visiting *from the Ormond Beach area and Port Orange* area are encouraged to access the Granada and Dunlawton Bridges respectively.

Please send e-mail to sp41008@ci.daytona-beach.fl.us with questions or comments about this web site.

Copyright © 1998 City of Daytona Beach. [Legal Disclaimer](#).

Last modified: June 19, 2002.

Done Internet

Source: www.ci.daytona-beach.fl.us/police/special_events_safety_security.htm

CITY OF CHICAGO DEPARTMENT OF TRANSPORTATION

Chicago: Dept. of Transportation - Microsoft Internet Explorer

File Edit View Favorites Tools Help


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Address <http://www.ci.chi.il.us/Transportation/TravelAdvisories/Taste2002C.html>

City of Chicago Home Mayor's Office Search/Subject List Site Map Feedback What's New


Department of Transportation

Dept. Home Dept. Contacts

 Richard M. Daley, Mayor
Miguel d'Escoto, Commissioner
Department of Transportation

Traffic Advisory

Taste of Chicago Opens June 28-July 7, 2002




---TASTE OPENS---

Some food for thought for traveling to the Taste of Chicago.

The dinner bell opening the 2002 Taste of Chicago rang on Friday June 28th, at 11:00 a.m., and continues through July 7th! There are many great ways to get to the Taste.

Here is a menu of ideas.

What is closed?



Columbus between Monroe and Roosevelt, Congress between Michigan Avenue and Columbus Drive, and Jackson from Lake Shore Drive to Michigan Avenue.

If I drive, where do I park?

The Millennium and Monroe Garages are right in Grant Park, with entrances on Columbus between Randolph and Monroe. Park for \$10 for 12 hours.

NEW SHUTTLE SERVICE --- McCormick Place -

On Saturday and Sunday Taste Shuttle service will operate from the lots on King Drive near 25th Street main entrance to McCormick West, and the 31st street lot off of Lake Shore Drive. The shuttles will run from one hour before and after the Taste and offer an excellent alternative to park away from the fest grounds and avoid congestion. Anyone coming from the west can exit I-55 at King Drive, and turn left into Lot A.

Can't I just park at the Museum Campus?

With Soldier Field construction, Museum Parking is very limited and expected to be at capacity at most times with Museum visitors. See the free Trolley information and public transportation info

I would rather leave the car at home!

CTA and Metra are the best way to reach the fests. The Elevated lines stop at Wabash and Adams, and the Red and Blue Line stops at Jackson are within a 10 minute walk to the Taste. Plus Chicago's free trolleys will offer increased service to and from the Taste of Chicago! All lines will run from 10:00 a.m. to 7:00 p.m. from June 28 to July 7. (July 3 service ends at 6:00 p.m.) On the Metra/Museum (green) route, twice as many trolleys will run. Throughout the Taste, green route trolleys will arrive about every 10 minutes. Your personal CTA, Pace, and Metra trip information is a quick phone call away at (any area code) 836-7000.

I'm a daily commuter wanting to avoid any congestion around Grant Park due to Taste closures!

Traveling southbound on Lake Shore Drive, from the north, exit at Michigan Avenue or Grand. Traveling northbound LSD from the south, exit at Roosevelt over to Canal and Clark, and enter the loop from the west to avoid Grant Park congestion.

Closures remain through Monday mid-day, July 8th. Morning commuters can also avoid congestion by using Monroe instead of the more heavily traveled Washington from the JFK into the city.

For event and travel information including 24 hour travel times, weather and e-mail bulletins visit www.cityofchicago.org/intheloop and AM 1650 for Lake Shore Drive Travel information.

REVIEW

So again, what's different this year?

1. A new free weekend taste shuttle service from the McCormick lots at King Drive and 31st Street, letting you avoid all congestion.
2. Limited parking at Soldier Field because of reconstruction, that will be filled most of the time with Museum visitors, so go directly to Millennium or McCormick (on the weekends) if your headed to the fest or fireworks.
3. Trolley service between Metra Stations and the Museum Campus is greatly beefed up during the entire Taste.

Visit www.cityofchicago.org/transportation/trolleys/ for Trolley routes.

How do I get to the parking again?

Millennium and Monroe Garages are steps from the Taste, and accessible from Columbus, between Randolph and Monroe. From Michigan Avenue or Lake Shore Drive simply take Randolph turning south on Columbus right into the garage. From the Expressway system, take Ohio all the way to Fairbanks and South to the entrances. (Fairbanks turns into Columbus as you go south.)

McCormick Lots:

McCormick Place - On Saturday and Sunday Taste Shuttle service will operate from the lots on King Drive near 25th Street main entrance to McCormick West, and the 31st street lot off of Lake Shore Drive. Anyone coming from the west can exit I-55 at King Drive, and turn left into Lot A.

And 836-7000 from any Chicago area code gets you public transportation information.

Source: www.ci.chi.il.us/Transportation/

SEATTLE CENTER SEATTLE, WA

The screenshot shows a Microsoft Internet Explorer browser window displaying the Seattle Center website. The page title is "Seattle Center - Parking & Traffic Hotline". The address bar shows the URL: http://www.seattlecenter.com/transportation/Hotline.htm. The website header features the Seattle Center logo and navigation tabs for "INFORMATION" and "TRANSPORTATION". A sidebar on the left contains various menu items including "EVENTS", "ATTRACTIONS", "CAPITAL PROJECTS", "INFORMATION", and "AGENTS/PROMOTERS". The main content area is titled "Seattle Center Peak Traffic and Parking Demand Report July 1 thru July 31, 2002". It lists daily event details, including venue, event time, heavy traffic periods, and parking forecasts for each day from Thursday, July 11, 2002, to Sunday, July 21, 2002.

**Seattle Center Peak Traffic and Parking Demand Report
July 1 thru July 31, 2002**

Thursday, July 11, 2002

Event Venue	Event Time
KeyArena	7:00 - 9:00 p.m.
Heavy Traffic Period(s):	6:00 till 7:00 p.m.
Parking Forecast:	The Mercer St. Garage will not reach capacity

Friday, July 12, 2002

Event Venue	Event Time
KeyArena	7:00 - 9:00 p.m.
Heavy Traffic Period(s):	6:00 till 7:00 p.m.
Parking Forecast:	The Mercer St. Garage will not reach capacity

Friday, July 19, 2002

Event Venue	Event Time
KeyArena	7:00 - 9:00 p.m.
On grounds	11:00 a.m. - 9:00 p.m.
Heavy Traffic Period(s):	All day
Parking Forecast:	The Mercer St. Garage will reach capacity

Bite of Seattle Festival is on the grounds daily from July 19th till July 21st. Hours are from 11:00 a.m. till 9:00 p.m.

Saturday, July 20, 2002

Event Venue	Event Time
KeyArena	7:00 - 9:00 p.m.
On grounds	11:00 a.m. - 9:00p.m.
Heavy Traffic Period(s):	All day
Parking Forecast:	The Mercer St. Garage will reach capacity

Bite of Seattle Festival is throughout the grounds July 19th through July 21st. Hours are from 11:00 a.m. till 9:00 p.m.

Sunday, July 21, 2002

Source: www.seattlecenter.com

ENTERTAINMENT AND SPORTS ARENA RALEIGH, NC

The screenshot shows the website interface for the Entertainment & Sports Arena. At the top, there is a navigation bar with links for Home, Site Map, E-Mail Club, Comments & FAQ, and Contact Us. Below this is a banner for the Pavarotti event, featuring a 'WIN GREAT PRIZES!' contest and 'SECURE YOUR 2002-03 SEASON TICKETS!' promotion. A left-hand navigation menu includes links for ESA History, Arena Tour, Technical Specs, Webcam, FAQ, Getting to ESA, Directions & Map, Parking Information, Radio Station, Raleigh Area, Changeover, Regulations, ADA Guide, E-Mail Club, and Contact Us. The main content area is titled 'PARKING INFORMATION' and includes two photographs of stadium entrances: one on 'Covecroft Mill Rd' and another on 'Edwards Mill Rd'. Below the photos is a list of parking and traffic tips, followed by a section titled 'ESA PARKING & TRAFFIC TIPS' with detailed instructions on arrival, traffic delays, and parking rules.

GENERAL INFORMATION

General parking may be purchased in advance at Arena Box Office or through the Group Sales Department.

The **Arena Main Entrance** is located on Edwards Mill Road. To avoid traffic congestion, please access the facility from Wade Avenue to Edwards Mill Road. Blue Ridge Road should be avoided.

VIP and Premier Parking entrances are off Westchase Road from Blue Ridge Road. VIP and Premier parking pass holders entering any other gate will be directed to these reserved lots.

Private vehicle entrance directly from **Wade Avenue** is not permitted. Westbound buses may use this entrance by exiting Wade Avenue at Edwards Mill Road and following the bus entrance signs. Eastbound buses must use the Edwards Mill Road entrance to the parking lot and follow the bus parking signs.

Buses, shuttles, vans, limousines, taxis, and other multiple transportation vehicles are permitted to enter the Entertainment & Sports Arena directly off Wade Avenue at Gate E or at Gate C off Trinity Road. Appropriate signs should be displayed in the vehicle windshields if no commercial markings are visible.

FREE MOTORIST ASSISTANCE

- Lockout Assistance
- Jump Starts
- Flat Tire Assistance
- Lost Car Assistance
- Towing

Contact Guest Services, Security, or any Parking Attendant for help.

Please Note: Increased police officers and security measures are in place at the Entertainment & Sports Arena.

IMPORTANT PHONE NUMBERS

Guest Services Hotline	919.861.CARE
Arena Info	919.861.2300
Arena Security	ext. 1141
Arena Parking	ext. 2802

ENTRY AND DEPARTURE FLOW TIMES

(Based on 13,000 guests and 5000 vehicles)
If you arrive at the ESA, your access time will be:

Arrival Flow Time / Approximate Parking Time

6:00 pm - 6:10 pm	/ APT 3 minutes
6:10 pm - 6:20 pm	/ APT 8 minutes
6:20 pm - 6:30 pm	/ APT 12 minutes
6:30 pm - 6:40 pm	/ APT 18 minutes
6:40 pm - 6:50 pm	/ APT 24 minutes
6:50 pm - 7:10 pm	/ APT 26 minutes

Departure Flow Time / Approximate Departure Time

1 - 5 minutes	after game / ADT 5 - 10 minutes
5 - 10 minutes	/ ADT 10 - 20 minutes
10 - 20 minutes	/ ADT 20 - 25 minutes
20 - 30 minutes	/ ADT 25 - 35 minutes
30 - 40 minutes	/ ADT 18 - 25 minutes

PARKING FEES:
(Fees may vary for select events - check the event page for your event to be sure)

Automobiles	\$7.00
Limo/RV	\$12.00 (no overnight parking)
Bus	\$20.00 (larger than 15 passenger vans)

WHY TO ARRIVE EARLY/HOW TO BEAT TRAFFIC BEFORE AND AFTER THE GAME:
Did you know that in addition to the games, the ESA has many exciting things for you to do during each visit to the Entertainment and Sports Arena?

Come Early & Enjoy these Pre- and In-Game Activities

- Participate in the free AT&T Wireless Phone Game. Register at Section 103 or at the AT&T Business Center
- Visit The Deck sponsored by Colony Homes for pub style food and a great view of the game.
- Sign up for Promotions during each game (Visit the Promotions Kiosk for more information)
- Watch for up-to-date statistics and special features on the Jumbotron.
- Purchase Carolina Hurricanes, NCSU, and Cobras merchandise in The Eye merchandise stores
- Tailgate with family and friends pre-game in the parking lot (Parking Lots open two hours before game time)
- Get the first bid on Kids N' Community Silent Auction Items
- Watch the Teams warm-up

Don't Leave the ESA without Checking out these Post-Game Activities

- Stop by The Deck for post-game refreshments
- Enjoy a live band performance every Fridays and Saturday night post-game in the Arena Club (free for everyone!)
- Take a shot on goal on Slapshot Sunday.... after most Sunday Afternoon games and some Saturday afternoon games, all children can take a shot on goal right on the ice.

Source: www.esa-today.com

RICHMOND INTERNATIONAL RACEWAY RICHMOND, VA

Richmond International Raceway - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media Print Screen

Links Address <http://www.rir.com/> Go

RICHMOND INTERNATIONAL RACEWAY
The Action Track
Members Only SIGN IN

Welcome To Richmond International Raceway

Search Print Screen **Purchase Tickets** Purchase race tickets now. **1-800-PITSHOP.COM** Shop Now For Officially Licensed Merchandise

TICKETS
EVENTS
NEWS
HOSPITALITY
TRACK INFO
MAPS
AREA INFO
MULTIMEDIA

RACE AGENT
Your personal guide to using this site!

FURNAL 250

CHEVY ROCK & ROLL 400 TRAVEL PACKAGES \$795*
CLICK HERE

Fan Polls
Who will win the Virginia is for Lovers 200 NASCAR Craftsman Truck Series race at Richmond International Raceway?

Tony Stewart
 Brendan Gaughan
 Bobby Hamilton
 Travis Kvapil

submit

Maps
[Shuttle Parking Map](#) | [Traffic Map](#) | [Driving Directions](#) | [Area Map](#) | [Grandstand Map](#)

Shuttle Parking Map
Avoid the traffic with our free and easy downtown shuttle service that is convenient to all Major Interstates around Richmond.

[Click on Map](#)

Traffic Map
This map will show you the best way to drive to Richmond International Raceway during an event.

[Click on Map](#)

Driving Directions
Basic driving directions to Richmond International Raceway from I-95 and I-64. [Get Directions...](#)

[Click on Map](#)

Area Map
Richmond International Raceway is located within 100 miles of Washington, D.C., Baltimore, Roanoke, Norfolk, and Raleigh.

[Click on Map](#)

Grandstand Map
This map shows the important features at Richmond International Raceway.

[Click on Map](#)

ISC CORPORATE **MRN RADIO** **1-800-PITSHOP.COM**

DAYTONA 500 TICKETS
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Source: www.rir.com

DTE ENERGY MUSIC THEATRE CLARKSTON, MI

Official Site of DTE Energy Music Theatre - Microsoft Internet Explorer

Address: <http://www.palacenet.com/content.cfm?category=2&pageid=277>

Palacenet.com Home | The Palace of Auburn Hills | Meadow Brook Music Festival | Detroit Pistons | Detroit Fury | Detroit Shock | MyPal Rewards

Home
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Venue
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Palacenet Search

Site Events

Go!

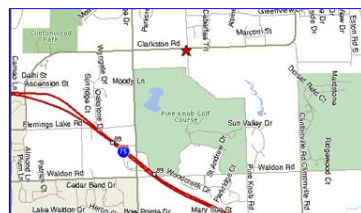
Seating Chart
Driving Directions
Statline Club
Employment
Part-Time Employment
FAQs
Merchandise
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**Earn Points
Get Rewards**



Directions & Parking

DTE Energy Music Theatre Location: Easily accessible off I-75 at Sashabaw Road, in Clarkston, Michigan (Exit 89).



Click on the map above to enlarge.

Get [Driving Directions from MapQuest](#)

DTE Energy Music Theatre
7773 Pine Knob Rd
Clarkston, MI US

Entrances: Two entrances off Sashabaw Road, north of I-75 and one entrance off Pine Knob Road.

Alternative Route In: Exit I-75 at Sashabaw Road and go south approximately 100 yards to Waldon Road. Go left (east) on Waldon Road to Pine Knob Road. Go left (north) on Pine Knob Road to DTE Energy Music Theatre gates.

Parking Lot Policies: The parking lot opens at 5:00 p.m. for most shows or 2 1/2 hours prior to a matinee show. Barbecuing is allowed on paved areas of lot. No open alcohol on the lot. No re-admittance to the lot. Parking for disabled guests is located outside the east entrance to the facility.

Parking Fees: A [\\$3.00 parking fee is added to each ticket purchase](#).

Drop-off Procedure: When dropping off a guest for a show, you may enter any drive and will not be charged a parking fee. Drop off your party at Aurora Park. When dropping-off, the driver may stay in Aurora Park during the show. When returning to pick up your party, enter the property through the South Sashabaw Road Drive (closest to I-75). You may enter the lot to meet your party at Aurora Park, or stay in the South Drive near the cashier trailer for easier exiting. We suggest you arrive 30 minutes prior to the show ending to avoid outbound traffic.

DTE Energy Music Theatre (Ingress):

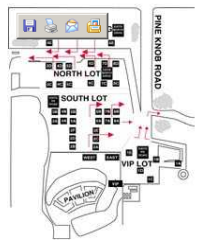
I-75 traffic can access DTE Energy Music Theatre at exit 89 (Sashabaw Road) from two different ways: First, I-75 traffic can follow Sashabaw Rd. North to either South or North Drives. Second, I-75 traffic can follow Sashabaw Rd. South to Waldon Road, following Waldon Road (East) to Pine Knob Road.

DTE Energy Music Theatre (Egress):


Only two exits are available for traffic to egress the Pine Knob lot, North Drive and Pine Knob Road Drive. The Grass lot, 'Z' lot and North lot must exit North Drive to Sashabaw Road. The South lot and VIP lots must exit Pine Knob Road Drive, following Pine Knob Road to Waldon Road to Sashabaw Road.

Lock Out/Jump Start

Lockouts, jumpstarts and assistance in changing flat tires are provided as a courtesy by either Waterford Towing Co. and/or Palace Parking Managers.



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Other Driving Directions

- [The Palace of Auburn Hills](#)
- [Meadow Brook Music Festival](#)

Source: www.palacenet.com

PNC PARK PITTSBURGH, PA

Directions and Parking

How to get to PNC Park

Nearly two and a half million Pirates fans visited PNC Park in 2007 summer, here are the fastest and easiest ways to come back to P

DRIVING DIRECTIONS

- » From the North
- » From the South and West
- » From the East

WHERE DO I PARK?

Pittsburgh is going through some exciting changes. While that me

If you're coming from the NORTH, you should park in the NORTH
Your best parking choice is to use one of the North Shore surface North, Route 65 or Route 28. If you are coming from the north, you Shore Garage.

If you're coming from the EAST, SOUTH or WEST - parking down
You can then get to the ballpark by utilizing the "T" and walking ove way to get to the ballpark!

- » **Downtown Parking Map - Arriving (640x480 - 28k)**
- » **Downtown Parking Map - Arriving (800x600 - 38k)**

After the game, if you are going SOUTH or WEST, you'll have easy

- » **Downtown Parking Map - Leaving (640x480 - 28k)**
- » **Downtown Parking Map - Leaving (800x600 - 38k)**

There are over 20,000 parking spaces in downtown Pittsburgh. P:

- Ft. Duquesne and Sixth Street garage (1)
- Ninth and Penn garage (2)
- Third Avenue garage (3)
- Oliver (Lazarus) garage (4)
- Mellon Square garage (5)
- Wood / Allies garage (6)
- Smithfield / Liberty garage (7)
- The new First Side garage* (8)
- Westinghouse garage (9)

* The new First Side garage connects to and from the new First Avenue "T" station. Fans can ride for free to the Wood Street Station and enjoy the walk across the Clemente Bridge to PNC Park.

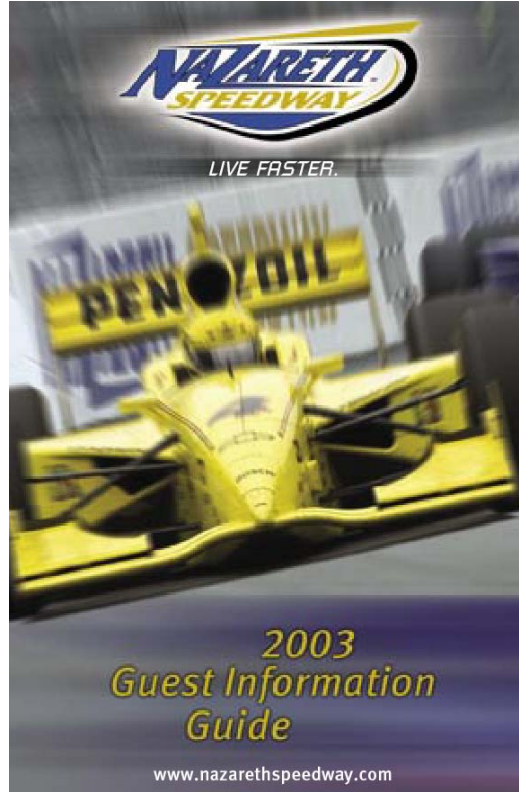
There are nearly 50 other parking lots / garages downtown. The best part is... it's only a four-minute walk over the Roberto Clemente Bridge to PNC Park making parking downtown very convenient.

PUBLIC TRANSPORTATION

Source: pirates.mlb.com

APPENDIX M VENUE TRANSPORTATION GUIDES

NAZARETH SPEEDWAY NAZARETH, PA



WELCOME TO "THE WORLD'S FASTEST MILE!"

Dear Guest:

In 2003, Nazareth Speedway is proud to bring back some of the most exciting racing in the country, including the series we've enjoyed watching compete at this historic one-mile oval for years – the IRL IndyCar series. We are extremely proud to welcome back native son Michael Andretti – and his new Andretti/Green Racing team. In addition, some of your old favorites, including Dario Franchitti, Tony Kanaan, Kenny Brack and Scott Dixon, will return to battle two-time IRL champion Sam Hornish, Jr., as well as new favorites Helio Castroneves, Al Unser, Jr., Sarah Fisher and Eddie Cheever, Jr. The IRL IndyCar series will be joined by the USAC Midgets, Sprints and Silver Crown events to create one of the most unique open-wheel racing weekends on the East Coast.

This season's lineup also includes the return of the NASCAR Busch series event, which features the rising stars of NASCAR vying to become the next Dale Earnhardt, Jr., Jamie McMurray or Greg Biffle – all of whom got their start at Nazareth Speedway. The popular NASCAR Featherlite Modified series will join the NASCAR Busch series on Sunday afternoon.

Nazareth Speedway could not continue to bring this great racing to the Lehigh Valley if not for the continued support and loyalty that you, our guests, have shown us throughout the years. As in the past, we are committed to providing the highest level of guest services throughout the 2003 race season. Please let us know how we are doing by sending an email to fans@nazarethspeedway.com. After all, many of the practices now in place are a direct result of your feedback.

We hope your visit to Nazareth Speedway is enjoyable and that we will see you again soon at our next event!

Best regards,

Craig E. Rust
President
Nazareth Speedway

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GETTING HERE

Nazareth Speedway is just a short trip from both Philadelphia and New York City. The routes offered below should serve as a general guideline only and are not necessarily the best routes from your area. Please consult a more detailed map for specific instructions from your area.

FROM HARRISBURG

Route 78 E • Exit 51; Route 22 E • Route 191 N

FROM THE NEW ENGLAND AREA

Route 84 W to Route 209 S • Continue to 33 S to Route 248 W • Route 191 S

FROM NEW YORK

Route 80 W to Route 287 S to Route 78 W to Route 33 N to Route 248 W • Route 191

FROM OHIO

Route 80 E to Route 33 S • Route 248 W • Route 191 S

FROM PHILADELPHIA

PA Turnpike (Northeast Extension 476 N) • Exit 33; Route 22 E to Route 33 N to Route 248 E

FROM POCONO AREA

Route 80 W to Route 33 S • Route 248 W • Route 191 S

FROM TRENTON

Route 31 N to Route 78 W to Route 33 N to Route 248 W to Route 191 S

TRAFFIC

The following traffic patterns are provided to assist you in traveling to and from Nazareth Speedway, in cooperation with the Pennsylvania Department of Transportation and state, local and area police agencies.

Please help us get you in and out of Nazareth Speedway as quickly and efficiently as possible by following the instructions of the law enforcement officers directing traffic. Also, please be patient and courteous to fellow race fans if delays occur. Most importantly, please drive safely and leave the racing to the pros on the track – we would like to see you back for another exciting weekend of racing at Nazareth Speedway.

TRAVEL TIPS

- Use recommended routes. The guest guide includes maps that diagram the inbound and outbound traffic patterns around Nazareth Speedway.
- Please follow the directions of police officers. They will do their best to ease the burden of delays that may be caused by increased traffic flow and the enhanced security policy at Nazareth Speedway.
- Make sure you have plenty of gasoline.

30

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INBOUND TRAFFIC

Highway 191 – Northbound from U.S. 22: Traffic approaching from this direction will turn left onto Christian Springs Rd. to the best available parking lot. Only vehicles with the appropriate, valid credentials will be directed to either Gate 1 or Gate 2.

Highway 191 – Southbound: Traffic approaching from this direction will turn right onto Route 248 and into the best available parking lot. Only vehicles with the appropriate, valid credentials will be directed to either Gate 1 or Gate 2.

Highway 248 – Eastbound: Traffic approaching from this direction will turn right onto Georgetown Rd. and into the best available parking lot. Only vehicles with the appropriate, valid credentials will be directed to either Gate 1 or Gate 2.

Highway 248 – Westbound from Route 33: Traffic approaching from this direction will turn left onto Route 191 into the best available parking lot. Only vehicles with the appropriate, valid credentials will be directed to either Gate 1 or Gate 2.

OUTBOUND TRAFFIC

Gate 1 – Traffic will be directed South (right turn ONLY) on Highway 191.

Gate 2 – Traffic will be directed North (left turn ONLY) on Highway 191. Guests needing to travel south should turn right on Route 248 and proceed east to Interstate 33 south.

Gate 3 – Traffic will be directed East (right turn ONLY) on Route 248.

Gate 4 – Traffic will be directed West (left turn ONLY) on Route 248. Guests needing to travel north should proceed to Route 946 north or Route 512 north.



WOULD LIKE TO THANK OUR CORPORATE PARTNERS



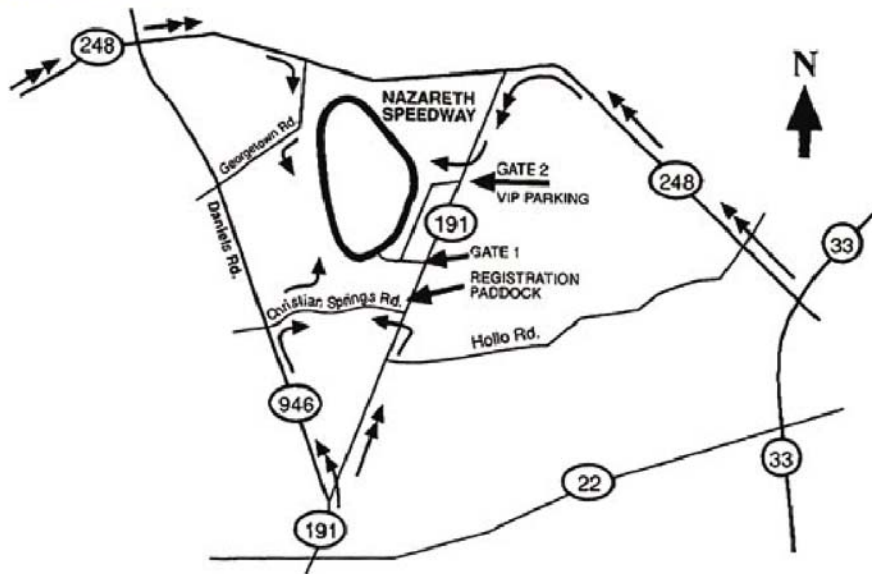
32

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FAN GUIDE 2003



INBOUND TRAFFIC MAP



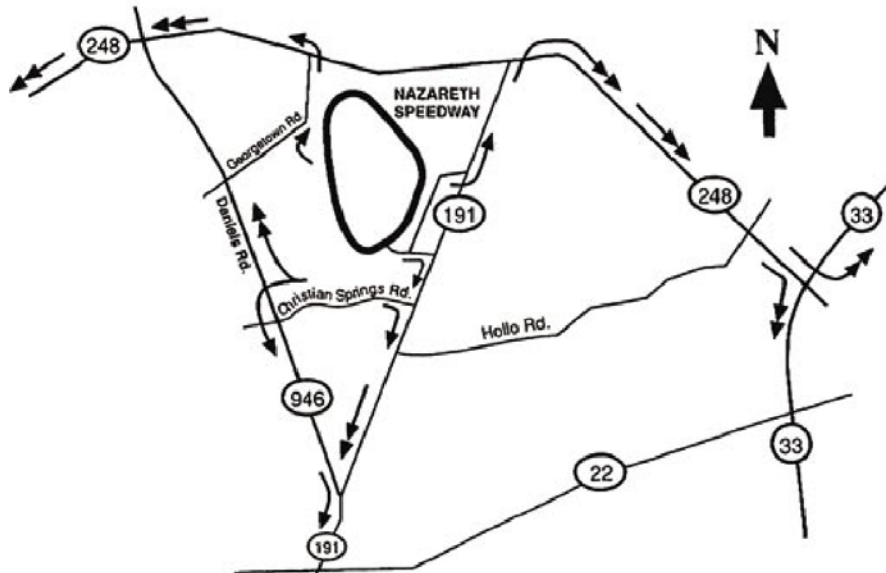
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FAN GUIDE 2003



OUTBOUND TRAFFIC MAP



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Source: www.nazareth Speedway.com



2002 Ford Field Parking Map Legend



Ford Field is conveniently located adjacent to major freeways and thoroughfares. Approximately 30,000 parking opportunities are available within a 20 minute walk from Detroit's central business district to Ford Field. Please contact private off-site parking facilities listed here to reserve your parking space for Detroit Lions games.



It's A Whole New Animal

Off-Site Parking Facilities

Lot No.	Facility Operator	Phone
1	Ampco System Parking	(313) 965-0463
2	Central Parking System	(313) 963-6839
3	*City of Detroit Municipal Parking	(313) 967-1612
4	Handy Parking	(313) 831-6236
	Mobile Parking	
	Woodward Parking	
5	HDC Partners, LLC	(313) 962-8300
6	JFR Services, Inc.	(586) 468-1654
7	Miller Parking	(313) 259-2434
8	Olympia Entertainment	(313) 471-3264
9	Park-Rite, Inc.	(586) 784-1006
10	Prime Parking	(866) 982-7627
11	Renaissance Center Parking	(313) 567-3009
12	Second City Garage	(313) 963-4038

*The general parking information on this designated 3a, 3b, 3c, 3d, 3e, 3f, 3g, 3h, 3i, 3j, 3k, 3l, 3m, 3n, 3o, 3p, 3q, 3r, 3s, 3t, 3u, 3v, 3w, 3x, 3y, 3z, 3aa, 3ab, 3ac, 3ad, 3ae, 3af, 3ag, 3ah, 3ai, 3aj, 3ak, 3al, 3am, 3an, 3ao, 3ap, 3aq, 3ar, 3as, 3at, 3au, 3av, 3aw, 3ax, 3ay, 3az, 3ba, 3bb, 3bc, 3bd, 3be, 3bf, 3bg, 3bh, 3bi, 3bj, 3bk, 3bl, 3bm, 3bn, 3bo, 3bp, 3bq, 3br, 3bs, 3bt, 3bu, 3bv, 3bw, 3bx, 3by, 3bz, 3ca, 3cb, 3cc, 3cd, 3ce, 3cf, 3cg, 3ch, 3ci, 3cj, 3ck, 3cl, 3cm, 3cn, 3co, 3cp, 3cq, 3cr, 3cs, 3ct, 3cu, 3cv, 3cw, 3cx, 3cy, 3cz, 3da, 3db, 3dc, 3dd, 3de, 3df, 3dg, 3dh, 3di, 3dj, 3dk, 3dl, 3dm, 3dn, 3do, 3dp, 3dq, 3dr, 3ds, 3dt, 3du, 3dv, 3dw, 3dx, 3dy, 3dz, 3ea, 3eb, 3ec, 3ed, 3ee, 3ef, 3eg, 3eh, 3ei, 3ej, 3ek, 3el, 3em, 3en, 3eo, 3ep, 3eq, 3er, 3es, 3et, 3eu, 3ev, 3ew, 3ex, 3ey, 3ez, 3fa, 3fb, 3fc, 3fd, 3fe, 3ff, 3fg, 3fh, 3fi, 3fj, 3fk, 3fl, 3fm, 3fn, 3fo, 3fp, 3fq, 3fr, 3fs, 3ft, 3fu, 3fv, 3fw, 3fx, 3fy, 3fz, 3ga, 3gb, 3gc, 3gd, 3ge, 3gf, 3gg, 3gh, 3gi, 3gj, 3gk, 3gl, 3gm, 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**APPENDIX N
SAMPLE IMPLEMENTATION PLANS**

**INDIANA STATE POLICE
2002 BRICKYARD 400 - TABLE OF CONTENTS**

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Source: Indiana State Police

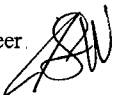
INDIANA DOT
2002 BRICKYARD 400



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FRANK O'BANNON, Governor
J. BRYAN NICOL, Commissioner

DATE: 1 August 2002
TO: All INDOT Units Assigned the Brickyard 400 Race Detail
FROM: Jay Wasson, ITS Operations Engineer
Operations Support Division 
RE: Detail Specifics for Brickyard 400 Detail scheduled for Sunday, August 4, 2002

DETAIL OVERVIEW

INDOT through the Greenfield District based ITS program will conduct a race day special detail to facilitate the movement of persons to and from the Indianapolis Motor Speedway (IMS) via the Interstate System in Marion County, Indiana. The detail shall consist of the following elements:

- Traveler Information
- Incident Response & Mitigation
- System Monitoring (i.e. traffic conditions)
- Motorist Assistance
- Traffic Control, and
- Strategic Planning

DETAIL SCHEDULE

- 0530 - Command Center Opens at IMS
- 0600 - INDOT COMMAND operational at IMS Command Center
 - AM Interstate Patrol Units 10-41
- 0630 - INDOT Maintenance to close I-74 Eastbound right lane at I-465
 - AM Interstate Patrol Units to be in assigned zone beginning routine patrol.
- 0700 - Public Gates open at the Indianapolis Motor Speedway
- 1200 - PM Interstate Patrol Units 10-41
- 1300 - NASCAR Winston Cup Driver Introductions
 - INDOT Maintenance to remove I-74 lane closure
- 1330 - Start of Brickyard 400 (160 laps, 400 miles)
 - AM Interstate Patrol Units released from assigned patrol zones and permitted to return to Indianapolis Sub.
- 1400 - AM Interstate Patrol Units 10-42
- 1500 - INDOT maintenance to stage post-race traffic control equipment
- 1545^α - All units assigned to the post-race detail are to be in their assigned locations. (Lap 120 will be the target.)
- 1800 - Public Gates Close and Indianapolis Motor Speedway
- 1830^α - INDOT COMMAND releases operational control to Indianapolis Traffic Management Center
- 1930^α - PM Interstate Patrol Units released from assigned patrol zones and permitted to return to Indianapolis Sub.
- 2000^α - PM Interstate Patrol Units and any other 10-41 units for the detail 10-42

^α Times may vary due to variability in race duration.

UNIT ASSIGNMENTS

Name	Unit	Assignment	Radio Number	10-41	10-42
Holder, Don	38-30	PM Interstate Patrol	38-30	1200	2000
Howe, David	38-41	AM Interstate Patrol	38-41	0600	1400
Miller, Herb	38-22	PM Interstate Patrol	38-22	1200	2000
Newland, Mark	X-10	PM Interstate Patrol (w/ 38-30)	38-30	1200	2000
Roquet, Glenn	38-7	Command Center – IMS	INDOT COMMAND	0530	1830(?)
Silcox, Brian	38-40	AM Interstate Patrol	38-40	0600	1400
Wasson, Jay	38-1	Detail Coordinator	38-1	0530	1830(?)
Wuertz, Steve	X-9	Command Center – IMS	INDOT COMMAND	0600	1800

DETAIL SPECIFICS

- All Hoosier Helper FSP Units are assigned to the race day detail are to patrol the West Leg of I-465 from I-70 (Exit 9) to 56th Street (Exit 19). If traffic conditions dictate, patrol areas may be expanded at the discretion of the IMS Command Center.
- The IMS Command Center console will be known as INDOT Command for all radio traffic. All normal Hoosier Helper to Base radio traffic with the IMS Command Center is run through the **TMC DISPATCH** talkgroup except:
 1. The Indianapolis TMC shall be contacted for all private tow requests.
 2. The Indianapolis TMC shall be contacted for all abandoned vehicle log interactions.
- All non-critical van-to-van radio traffic should be communicated on **DTAG** unless the conversation relates to an active incident in which everyone on the Primary Talkgroup benefits from your insightful dialog. ☺
- During the pre-race and post-race traffic pattern, Hoosier Helpers are to advise INDOT command as to traffic flow conditions on the mainline and interchange ramps in regular intervals. The IMS Command Center will be using maps with the 2/10th Reference Markers, so use the 2/10th Reference Markers when communicating this traffic information.
- Units assigned the PM Interstate Patrol Detail are to load as many additional cones into their commissions as possible. Based on past experience, additional traffic control may be required during the post-race traffic pattern.
- Interstate Patrol Units that encounter “ticket scalpers” and/or “road side salespersons” are to do the following:
 1. Advise INDOT command as to the location and description of the subject(s).
 2. Approach the subjects and advise them that pedestrian traffic on the interstate is illegal. While we do not have enforcement powers, we can most certainly contact someone who does. This enforcement officer will not be lenient if the subject(s) do not comply with our warning.
 3. Advise INDOT command as to the disposition of your conversation.
 4. Monitor subject(s) actions as you and other units continue routine patrol of the area.

NOTE: While the City of Speedway does issue permits for these types of activities, the Interstate Right-of-Way is NOT within the city limits. Therefore, any permit that is flashed by the subject(s) is null and void on the Interstate!!

REPORT BILLERGENT BEHAVIOR TO THE TMC COMMAND IMMEDIATELY, IF YOU FEEL THAT YOUR LIFE OR THAT OF OTHERS IS THREATENED!!

- A copy of the official traffic pattern map is attached to this memorandum for your information.
- State Police units assigned exclusively to the race detail will operate on 52-OPS 2 outside of the track and 52-OPS 1 inside of the track. Due to the Hoosier Helper radios not currently having 52-OPS 1 or 2 programmed, these talkgroups can be monitored in units with onboard scanners as follows:
 - System → District 52 Tower
 - 52 OPS 1 → Talkgroup ID 16080
 - 52 OPS 2 → Talkgroup ID 16112

District 52 units assigned to routine district duties will continue to operate on 52 Dispatch

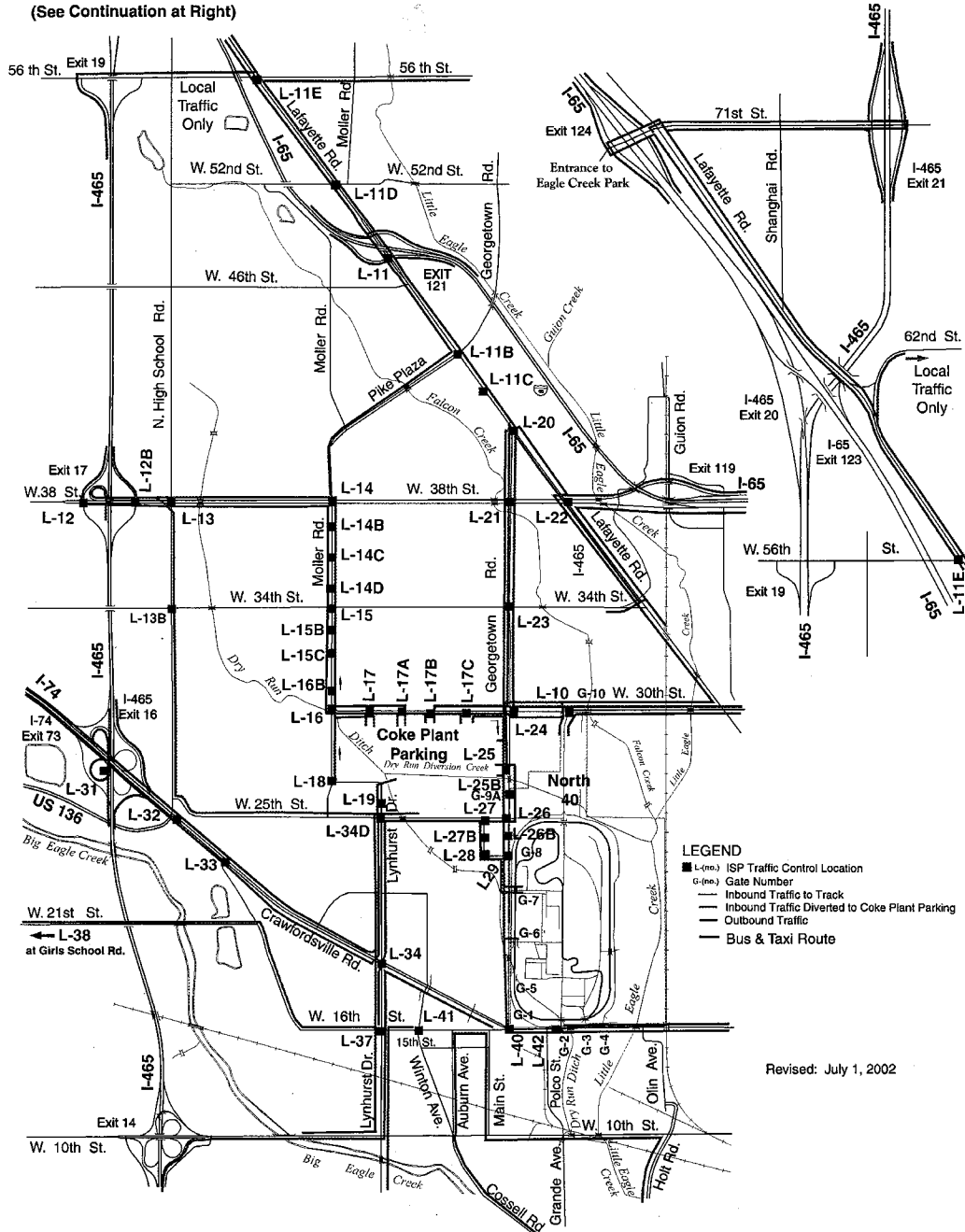
SPECIAL ASSIGNMENTS

- 38-30 and X-10 are to move the temporary DMS from Westbound Crawfordsville Road east of High School Road to eastbound I-465 east of I-65 on the south side of Indianapolis near mile marker 52.8. This DMS will be used to advise motorists to watch for stop or slowed traffic ahead due to the road work and associated traffic congestion on I-74 east of I-465.

Source: Indiana Department of Transportation

ISP- Indianapolis Motor Speedway Traffic Control Map

(See Continuation at Right)



Revised: July 1, 2002

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www.ops.fhwa.dot.gov

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