Developing and Enforcing Lane Closure Policies

tech transfer summary

A survey of lane closure policies highlights trends and discusses how transportation agencies deal with policy exceptions.

Objectives

- Catalogue and compare lane closure policies, including the undocumented aspects of these policies.
- Understand the motivation for lane closure policy development.
- Compare strategies regarding lane closure policy exceptions.
- Compare enforcement strategies.

Problem Statement

Traffic volume increases and an aging infrastructure require reconstruction, rehabilitation, and maintenance of existing facilities. However, resulting lane closures that reduce capacity through the work zone should not create unreasonable motorist delays. To help determine acceptable lane closures, some state transportation agencies (STAs) have developed policies for determining permitted lane closure times—the times of the day, week, or season a lane closure is allowed on a specific road segment.

Technique Description

This research addresses the lane closure policies of several STAs reputed to have good strategies:

- California Department of Transportation (Caltrans)
- Colorado Department of Transportation (CDOT), Region 1 and Region 6
- Indiana Department of Transportation (INDOT)
- Minnesota Department of Transportation (Mn/DOT), Metropolitan District
- Missouri Department of Transportation (MoDOT)
- Ohio Department of Transportation (ODOT)
- Wisconsin Department of Transportation (WisDOT)

Researchers reviewed the available policy documents of each agency. Then a survey was sent to each STA to determine its actions with respect to the undocumented mechanics of the policy. The survey consisted of three parts: (1) policy development, (2) exceptions to the policy, and (3) policy enforcement.

Key Findings

Each STA's lane closure policy is unique in its components and, although some states perform similar tasks, they do not necessarily perform each task at the same point in the process. While some of the policies were well-developed and extensively documented, others were still undergoing development.

June 2007

RESEARCH PROJECT TITLE
Lane Closure Policy Development, Enforcement, and Exceptions: A Survey of Seven State Transportation Agencies

SPONSORS
Smart Work Zone Deployment Initiative, a Federal Highway Administration pooled fund study,
Midwest Transportation Consortium,
U.S. DOT University Transportation Center for Federal Region 7

PRINCIPAL INVESTIGATOR
Thomas H. Maze
Professor, Civil, Construction & Environmental Engineering
Iowa State University
515-294-9459
tmaze@iastate.edu

MORE INFORMATION
www.ctre.iastate.edu/mtc/

MTC
Iowa State University
2711 S. Loop Drive, Suite 4700
Ames, IA 50010-8664
515-294-8103

Policy Development

The procedure used by STAs to determine when and where a lane closure is permitted generally consists of the following tasks:

1. Obtain current hourly traffic volumes where the work zone will be located
2. Determine a work zone lane capacity
3. Determine the impacts on traffic caused by a work zone
4. Use these components to determine whether or not a lane closure will be permitted. Commonly used methods for determining closures include computer analysis, application of static volume thresholds, or both.

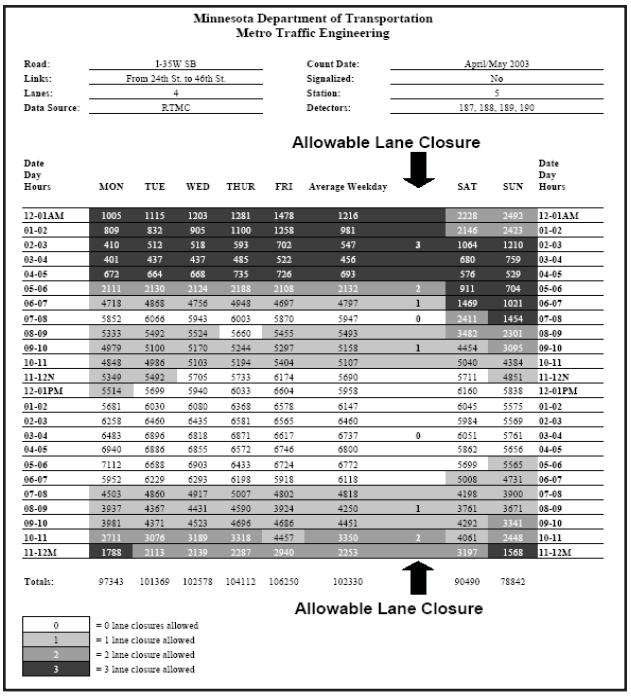
Local traffic pattern variations (due to special events, weather, tourism, or holidays) should be accommodated in lane closure policies to decrease the likelihood of unreasonable queues or delays. Local conditions that can cause traffic to vary can include special events, weather, holiday traffic, or seasonal variances where volume can increase in one direction of travel due to tourism.

Formal variations described in STA policies/procedures

STA	Yes/No	Types of variations described
Caltrans	Yes	Each closure is reviewed individually to account for variations, specific holidays
CDOT Region 1	Yes	Special events, seasonal, weekday/weekend, emergency situations
CDOT Region 6	Yes	Special events, seasonal, weekday/weekend, emergency situations
INDOT	Yes	Seasonal, regional patterns
Mn/DOT Metro	No	*
MoDOT	No	**
ODOT	Yes	Seasonal, holidays
WisDOT	Yes	Holidays, special events, seasonal

** Next edition will account for seasonal variations*
*** Variations are accounted for in hourly traffic volume reviews*

Systems that specify permitted lane closures based on specific days of the week depict actual conditions more accurately than systems that generalize any lane closure Monday through Friday as a "weekday closure." Graphic representations of lane closure times allow for a quick determination of general time periods when lane closures are permitted, while hourly breakdowns offer more precise beginning and ending times.



Minnesota Department of Transportation
Metro Traffic Engineering

Road: I-35W SB | Count Date: April/May 2003
Links: From 24th St. to 46th St. | Signalized: No
Lanes: 4 | Station: 5
Data Source: RTMC | Detectors: 187, 188, 189, 190

Allowable Lane Closure

Date Day Hours	MON	TUE	WED	THUR	FRI	Average Weekday		SAT	SUN	Date Day Hours
12-01AM	1005	1115	1203	1281	1478	1216		2228	2492	12-01AM
01-02	809	832	905	1100	1258	981		2146	2423	01-02
02-03	410	512	518	593	702	547	3	1064	1210	02-03
03-04	401	437	437	485	522	456		680	759	03-04
04-05	672	664	668	735	726	693		576	529	04-05
05-06	2111	2130	2124	2188	2108	2132	2	911	704	05-06
06-07	4718	4868	4756	4948	4697	4797	1	1469	1021	06-07
07-08	5852	6066	5943	6003	5870	5947	0	2411	1454	07-08
08-09	5333	5492	5524	5660	5455	5493		3482	2301	08-09
09-10	4979	5100	5170	5244	5297	5158	1	4454	3095	09-10
10-11	4848	4986	5103	5194	5404	5107		5040	4384	10-11
11-12N	5349	5492	5705	5733	6174	5690		5711	4851	11-12N
12-01PM	5514	5699	5940	6033	6604	5958		6160	5838	12-01PM
01-02	5681	6030	6080	6368	6578	6147		6045	5575	01-02
02-03	6258	6460	6435	6581	6565	6460		5984	5569	02-03
03-04	6483	6896	6818	6871	6617	6737	0	6051	5761	03-04
04-05	6940	6886	6855	6572	6746	6800		5862	5656	04-05
05-06	7112	6688	6903	6433	6724	6772		5699	5565	05-06
06-07	5952	6229	6293	6198	5918	6118		5008	4731	06-07
07-08	4503	4860	4917	5007	4802	4818		4198	3900	07-08
08-09	3937	4367	4431	4590	3924	4250	1	3761	3671	08-09
09-10	3981	4371	4523	4696	4686	4451		4292	3341	09-10
10-11	3711	3076	3189	3318	4457	3350	2	4061	2448	10-11
11-12M	1788	2113	2139	2287	2940	2253		3197	1568	11-12M
Totals:	97343	101369	102578	104112	106250	102330		90490	78842	

Allowable Lane Closure

0 = 0 lane closures allowed
1 = 1 lane closure allowed
2 = 2 lane closure allowed
3 = 3 lane closure allowed

Minnesota allowable lane closure chart specifying closures for specific days of the week

Exceptions to the Policy

The surveyed STAs indicated that (1) lane closure time exceptions involve circumstances that are truly out of the ordinary and (2) appropriate criteria and processes for granting exemptions have been incorporated into their lane closure policies. All agencies exempted emergency lane closures involving public safety from their official lane closure policies. Emergency repairs are also commonly exempted. While some STAs specify activities that are automatically exempt, others review circumstances on a case-by-case basis.

Policy Enforcement

Enforcement of a lane closure policy is important for reducing congestion and maintaining the integrity of the policy. However, most states indicated that enforcement issues are rare. Enforcement protocols include monitoring the lane closure initiation and removal times, monitoring permitted exceptions, monitoring traffic volumes during a closure by measuring queue lengths or delay, and instituting penalties for noncompliance.

Implementation Benefits

Lane closure policies can be a valuable component of an STA's overall safety and mobility objectives. These policies aim to reduce work zone-induced congestion by preventing lane closures when traffic demand would exceed the resulting capacity.