Temporary Traffic Control and Enforcement of Traffic Laws in Closed Road Sections

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ABSTRACT

Public travel by motor vehicles is often necessary in road and street sections that have been officially closed for construction, repair, and/or other reasons. This authorization is allowed to provide access to homes and businesses located beyond the point of closure. While the Manual on Uniform Traffic Control Devices (MUTCD) does address appropriate use of specific regulatory signs at the entrance to closed sections, direct guidance for temporary traffic control measures within these areas is not included but may be needed. However, interpretation and enforcement of common practices may vary among transportation agencies. For example, some law enforcement officers in Iowa have indicated a concern regarding enforcement and jurisdiction of traffic laws in these areas because the Code of Iowa only appears to address violations on roadways open to “public travel.” Enforcement of traffic laws in closed road sections is desirable to maintain safety for workers and for specifically authorized road users. In addition, occasional unauthorized entry by motor vehicles is experienced in closed road areas, causing property damage. Citations beyond simple trespass may be advisable to provide better security for construction sites, reduce economic losses from damage to completed work, and create safer work zones.

Key words: closed road sections—law enforcement—temporary traffic control
BACKGROUND

The Code of Iowa does not appear to definitively address the issues of temporary traffic control and law enforcement on roads and streets closed to general public access during construction, maintenance work, or other activities. Enforcement powers are granted to an agency for “public roads,” which may be defined as roads open to travel by the public at large. When a road or street is officially closed, a technicality may exist that such a facility is no longer “public,” and therefore may not be subject to the same level of enforcement by state and local agencies. In addition, the agency and the contractor are protected from liability within the boundaries of a closed road by the Code (except for gross negligence), possibly further confusing the responsibilities and authority of an agency. Pertinent sections of the Iowa Code relating to temporary road closure are discussed in this report, along with relevant sections from the codes of surrounding states.

Based on the issues described above, a research study was conducted to investigate temporary traffic control and enforcement practices and policies of various agencies in closed road sections. The three primary objectives of the research were as follows:

1. Provide a synthesis of current practices and policies regarding temporary traffic control and enforcement of traffic laws in closed road sections.
2. Evaluate the needs of state, county, and municipal transportation agencies relating to potential changes in enforcement policy for closed road sections.
3. Recommend changes in temporary traffic control and enforcement policies and procedures to improve safety in road closure areas.

This report presents the results of the second and third objectives. The summary of practices, policies, and state code reviews (objective 1) is not reported here due to space limitations, but can be found in the final report published by the Center for Transportation Research and Education at Iowa State University. This study presents findings from surveys of department of transportation (DOT) staff in Iowa and in other states, Iowa law enforcement officers, and local agency personnel, and findings from expert panel discussions. The preliminary findings suggest that enforcement of traffic control and safety in closed road sections could be improved through possible code revisions, better communication of best practices, implementation of surveillance and control technologies, and development of an expanded driver education program.

INTRODUCTION

Public travel by road users is often necessary in road and street sections that have been officially closed for construction, repair, or other reasons. This authorization is permitted in order to provide access to homes, farms, and businesses located beyond the point of closure. The Manual on Uniform Traffic Control Devices (MUTCD) does address appropriate use of specific regulatory signs at the entrance to closed sections; however, direct guidance for temporary traffic control (TTC) measures and enforcement of traffic laws within these areas is not included but may be needed. Interpretation and application of common practices may vary among transportation agencies. For example, some law enforcement officers in Iowa have indicated a reluctance to enforce traffic laws in these areas because the Code of Iowa appears to address only violations on roadways open to “public travel.” TTC and enforcement of traffic laws in closed road sections is desirable to maintain safety for workers and authorized road users. In addition, occasional unauthorized entry by motor vehicles is experienced in closed road areas, resulting in property damage and potential liability for agencies and contractors. Citations beyond simple trespass may be advisable to provide better security for construction sites, reduce economic losses from damage to completed work, and create safer work zones.
This study presents data collected directly from law enforcement officers, municipal and county engineers, and state DOT staff describing their opinions and personal experiences with TTC and law enforcement in closed road sections. The data was collected through surveys distributed both through the Internet and during a focus group interview session with county engineers and staff on December 5, 2006. A comprehensive breakdown of the survey results and interview session findings is included.

An advisory committee was invited to contribute to the study by sharing experiences and offering suggestions for possible Iowa Department of Transportation (Iowa DOT) specification revisions and Code modifications. The advisory committee included staff from the Iowa DOT, the Iowa Governor’s Traffic Safety Bureau, contractors, law enforcement officers, and city and county engineers. The committee met twice during the execution of the study, once near the initiation of research to discuss potential sources of information and later to discuss and respond to survey results and make suggestions for possible Code enhancements and Iowa DOT specification revisions. The results from the committee meetings are summarized in this report.

LITERATURE REVIEW AND EXISTING RESEARCH STUDIES

As part of this study, a literature review was performed to identify existing research and/or other references for guidance in applying TTC and enforcement in closed road sections.

Very few studies addressing these issues were identified. For example, Elias and Herbsman (2000) published the results of a study suggesting that legislation and programs at state and federal levels are emphasizing a need for increased study of work zone issues. This need is especially acute as it relates to road closures, since many transportation agencies shift resources from new infrastructure development to rehabilitation. A review of the academic literature in the fields of civil engineering found no studies or existing research dealing with the topic specifically. However, some notable studies have been performed on the related topics of TTC, temporary road closures, and lane closures. A field evaluation of late merge traffic control in work zones was performed by Beacher (2005), which only dealt with two-to-one lane closure and not full closure. Zech (2005) performed an evaluation of rumble strips and police presence as speed control measures in highway work zones and concluded that police presence with rumble strips decreased vehicle speeds greatest; however the highway was under traffic and not closed to through traffic. Pre-announced temporary closures were modeled by Tong (1998) to generate optimal routes for trips in road networks operating at capacity; however, the issue of traffic control enforcement was not mentioned. A study of urban work zone traffic management by McGuinness (1997) in the City of Columbus, Ohio, explored practices such as closing freeway ramps and approach roads to work areas to siphon off excess demand, providing alternate routes, and using a traveler information program, but the study does not address the issue of enforcement.

Interestingly, some studies have relevance to TTC in closed road sections because they primarily examined detection and surveillance on open roads. The subject of online object tracking for color video analysis was described by Lannizzotto (2002) as a possible use in traffic control because video sequences can track shapes, positions, and the orientation of objects. Use of closed circuit television systems to monitor/detect urban traffic and as a control device was explored by Franklin (1999). Harrison and Lupton (1999) discussed the development of the Automatic Road Traffic Event Monitoring Information System (ARTEMIS), a computer monitoring system that can detect traffic events and dispatch patrol cars. However no studies were found that specifically addressed the issue of closed road sections and enforcement of traffic laws therein. Therefore, the current study will make an important first step in analyzing the issues of traffic control and enforcement in closed road sections.
SURVEY RESULTS AND INTERVIEW SESSION FINDINGS

To determine the extent and severity of problems and issues associated with road closures, the research team created and distributed a survey at the Iowa County Engineers Association annual meeting and via the Internet. Similar surveys were distributed to cities and selected Iowa DOT staff. The county engineers’ survey consisted of 16 questions intended to help the team gain a more detailed understanding of the problems and issues that arise in closed road sections. A summary of the survey responses is provided below; the results have been divided into groups by responding agency (e.g., municipal, county, state).

The survey results from 34 responding municipalities found that 61% of respondents had experienced enforcement and/or traffic control problems in closed street sections, and 41% reported property damage resulting from unauthorized entry into these sections. The most commonly reported problem was damages to finished surfaces and slopes. Methods used by cities for addressing closed road sections included delegation or independent contracting and/or discussion at preconstruction meetings. Most respondents reported that any law enforcement used was reactive, after damage had already occurred. Solutions or suggestions for improvements offered by municipalities included improved signing and traffic control maintenance and improved contractor procedures and personnel training.

Survey results from 75 responding county engineers and staff showed that 90% of respondents had experienced enforcement and/or traffic control problems in closed road sections, with 54% reporting property damage resulting from unauthorized entry into those sections. The most commonly cited problems included damage to finished surfaces and slopes, theft of signs and barricades, low public awareness of important road work issues, and worker safety exposure. Mitigation strategies offered by the county engineers and staff were similar to those of municipalities, with an additional suggestion for a program to raise public awareness of issues.

The survey results from Iowa DOT staff indicated that 80% of respondents have experienced enforcement and/or traffic control problems in closed road sections, with 60% reporting damages resulting from unauthorized entry. The most commonly reported problems included damage to local property, risk management issues, and worker safety. To address concerns, preconstruction meetings were the preferred method of mitigation.

Law enforcement officers were surveyed with different questions than those given to municipalities and counties. The law enforcement survey asked officers to identify the Iowa Code sections they felt were most appropriate for enforcement in closed road sections, as well as those that should be clarified for better understanding. Officers were also asked whether they had answered a call in a closed road section and, if so, whether a serious accident had occurred. The officers were also asked if they were aware of any specific occurrences of court cases involving an interpretation of Iowa Code in closed road sections.

The results of 180 law enforcement officer surveys revealed that 87% had responded to a call in closed road sections one or more times, with 29% reporting that those calls involved a serious accident. Officers identified the most appropriate sections of the Iowa Code as 306.41, 321.1, and 321 (.228, .232, .252, .256, .260, .285, and .288). These sections primarily regard jurisdiction, signage, and driver conduct and compliance. The survey results indicate that most officers feel there are few problems with interpretation of the current Iowa Code; however, some modifications could better clarify the intent in the sections listed above.
A focus group interview session with county engineers and staff occurred on December 5, 2006, on the Iowa State University campus. In attendance were seven county engineers, one assistant county engineer, one county technician, and one representative from the Office of Local Systems at the Iowa DOT. The session lasted approximately 90 minutes and was facilitated by Dr. Kelly Strong and Tom McDonald of the Center for Transportation Research and Education. The facilitators provided four questions to stimulate discussion among the group. The questions covered the following topics:

- Perceived liability exposure
- TTC and law enforcement for construction, and their current levels of sufficiency
- Communication methods with and between contractors, enforcement agencies, emergency responders, local residents and businesses
- Opinions on modifying existing Iowa Code, Iowa DOT specifications, and MUTCD standards

The focus group consensus indicated that most concern for liability exposure or actual liability exposure involves signs and barricades. Barricades and protective fencing are often moved or vandalized, thus exposing finished work that may not be completely cured to vehicular traffic. Signs and warning lights that have been stolen, knocked down, or covered in dirt are sometimes not addressed in a timely manner, possibly exposing the agency to liability.

Project communication methods for road closures noted by the focus group included preconstruction conferences that involve local enforcement officers and the Iowa DOT. Advice for residents and businesses might be provided through letters, news media, and/or local radio segments. Coordination of postal delivery, school, or emergency routes must be planned ahead of time and implemented once the closure signs have been erected.

Suggested modifications to Iowa Code from the focus group included increasing fines and penalties for sign theft, removal, or damage. However, it was also stated that local magistrates and judges are often reluctant to impose the current penalties and fines. Another suggestion was to increase sign credibility by covering the road closure signs until the date of closure. Covering signs until needed improves message credibility. “Road closed” signs are sometimes installed before the route is actually impassible, which encourages drivers to ignore the signs, which can later result in damages to newly constructed work from unauthorized entry. It was also suggested that increased penalties for contractor noncompliance with temporary traffic control requirements may be necessary in the Iowa DOT specifications. A minimum response time for sign repair by contractors with penalties for delays may improve speed of response time for needed repairs.

ADVISORY COMMITTEE DISCUSSION AND SUGGESTIONS

Several experienced professionals from a variety of disciplines were invited to contribute to this research effort by sharing advice, opinions, and suggestions for needed improvement regarding the topic of closed road traffic control and enforcement. Committee members, who were listed previously in this paper, met twice during the progress of this study.

Advisory committee members were provided with an overview of the project, summary of literature (including Code provisions from Iowa and surrounding states not presented here), and survey summaries, and they were then asked to suggest ideas for possible Code, specification, and/or policy changes.

One member of the committee noted that road closure may not be a definitive issue, and there may be “degrees of road closures” and varying types of risk depending on the location, service level of the road,
etc. For instance, low-volume roads may not need to be signed as extensively during construction as higher volume facilities. In addition to varying types of “road closures,” there are also instances where the situation may change during the project life cycle, and when drivers find that a road section is signed as closed but is usable (for example, paving complete but guardrail not yet installed), it becomes very difficult for the contractor and agency to restrict entry, which can increase potential liability exposure.

Technology solutions such as controlled access gates, surveillance cameras, and video logs can assist agencies and contractors in managing risk on closed road sections. Additionally, effective strategies used in some jurisdictions include specific assignment of a deputy to issue citations to unauthorized traffic; preconstruction conference planning; ongoing coordination and cooperation with law enforcement; working with contractors on best practices for preventing, repairing, and recovering any damages; and use of proper MUTCD TTC.

In addition to road closures for construction and maintenance, similar issues may exist for special event road closures, such as the popular Register’s Great Bicycle Ride Across Iowa (RAGBRAI), street festivals, parades, etc. Because those in charge of special event closures may not have access to TTC expertise, good practice may be unknown, thereby increasing exposure to safety concerns and liability.

Section 306.41 may be the most relevant section of the Iowa Code pertaining to road closures. The liability waivers described in that section provide risk mitigation for agencies and contractors, except in the case of gross negligence. Gross negligence might occur when an agency or contractor fails to follow good practice and TTC prescribed in the MUTCD and project specifications. An example of gross negligence would be if an agency installs a “Road (Street) Closed” sign and allows road users to pass that point. When entry is allowed for property owners and businesses, the proper signs are “Road Closed to Through Traffic” or “Local Traffic Only.” The definition of gross negligence is determined through the discretion of the court, but the requirement for agencies to follow the state manual is clearly stated in the Iowa Code.

Committee members surmised that, in the case of property damage (including damage to completed work), it can be difficult to determine and/or locate the responsible individual. In addition, since fines are minimal and the Code does not provide definitive guidelines, it is often deemed not worthwhile to prosecute violators.

The most common process for initiating road or street closures is for the city council or board of supervisors to adopt a resolution and proper temporary traffic control designed by county or municipal engineers. The MUTCD recommends that TTC be inspected regularly, but there is ambiguity on the exact frequency. Even so, frequent inspections are a common interpretation, especially for overnight closures. Contractors or subcontractors are generally required by the project documents to provide and maintain prescribed TTC, including timely inspections and repairs. This can be problematic at times, especially with frequent unauthorized entry and the need for weekend surveillance. Some contractors frequently hire agency workers or other local personnel to check signage everyday, typically after hours.

The committee noted that there is currently no standard form for documenting surveillance, and some individuals have expressed opinions that log requirements should be eliminated. It is difficult to establish the credibility or performance effectiveness of a person hired to check signs and file logs. Also, the line of authority for needed sign repair is not always clear. A project contract involves the agency and prime contractor; however, it is common for subcontractors to perform TTC. Some county engineers want a minimum response time for needed sign repair and replacement, similar to that described in the Iowa DOT Standard Specifications.
Remote sensing for damage to important signs may be another option for promoting more effective TTC. A sensor could send a signal to law enforcement dispatchers, who could contact the contractor’s representative to replace or reset the device.

It was noted that a surveillance system may not be difficult to implement and may help solve some of the problems with TTC inspections, documentation, identification of trespassers and vandals, etc. Construction companies frequently make use of daily video logs to manage project risk for nonpublic projects, but privacy and other guidelines may be different for publicly funded improvements. Night vision cameras could be used to help identify unauthorized individuals or vehicles entering closed road sections or vandalizing signs and barricades. For continuous surveillance, a stationary camera might be helpful as a complement to a video log of all of a project’s TTC. For small projects (i.e., structure replacement), it may be possible to use entire scene cameras; for larger projects, the cameras could be focused on specific points of entry to the project.

The feasibility of a surveillance system should be further investigated. In spite of some legal issues needing resolution, the use of video surveillance is generally increasing. In Alaska, law enforcement must record all interviews, and courts are increasingly accepting the use of video logs as evidence. Unless identification of violators can be ascertained with certainty, the use of surveillance camera images as evidence may be problematic. However, the known presence of video surveillance on a project may very well be a deterrent for unlawful activities.

Another area warranting further investigation is the penalty for citations in closed road sections. Stiffer penalties, enforcement, and consistent prosecution of perpetrators may help reduce the problems currently experienced in closed road sections.

Committee members noted several Iowa Code sections where clarification of application in closed road sections might be beneficial. Sections 321.260 and 321.285 were specifically mentioned. Language could be added to the Code clarifying that statutes “apply to public roads, unless otherwise noted, open or closed” in Section 321.228. This would provide a clearer definition of “highway” that would include closed road sections. Clarification of certain Code sections could help improve consistency between jurisdictions. However, it was noted that even if infractions are provable, penalties are applied by a local judge or magistrate, and thus penalties for similar offenses vary widely across the state. Trespassing is a common citation, and this can be applied to unauthorized entry, whether on foot, in a car, or in an off-road vehicle. The process used in Linn County, Iowa, appears to be effective and could serve as a model for enforcement of authorized entry to closed road sections.

One county engineer on the committee reported over $1 million in costs due to vandalism over the years (not just in closed roads). A recommendation from this study is to gather information about the estimated cost of damages due to unauthorized entry in closed road sections. These data could be used in conjunction with a technology feasibility study, mentioned earlier, to compare costs and benefits.

The committee also suggested adding language to the Iowa DOT Standard Specifications indicating that the contractor is responsible for communicating and coordinating access issues with the public. In addition, past performance in TTC compliance could be included in contractor evaluation criteria.

Another suggestion from the advisory committee was to include pertinent work zone traffic control issues, including closed road requirements, in driver education programs. Public awareness of these important issues could prove beneficial in reducing crashes and violations in work zones. More support and information for driver education may be effective.
The committee recognized that the ultimate responsibility for safety in closed road sections must rest with the agency in charge. However, contractors must fulfill their obligations to provide and maintain quality TTC for all work zones areas, including closed roads and streets. Communication and cooperation between agencies and contractors is mandatory in this effort.

CONCLUSIONS

To conduct this research, information was gathered from many sources using several different methods. A literature review identified the few existing studies or references with specific relevance to the subject of law enforcement and temporary traffic control for closed road/street sections. Personal interviews with county engineers/staff, as well as expert opinions and guidance from an advisory committee, were also a part of this study and proved very beneficial. From these sources, the following conclusions can be drawn:

- Allowing limited public traffic on road or street sections that have been officially closed for construction, maintenance, or other special events is not uncommon in most agencies. Most state codes prohibit denial of lawful access to property without just compensation.
- Requirements and guidance for application of TTC for public travel in closed road/street sections is minimal in state DOT specifications and the MUTCD.
- Many public agencies have experienced problems with unauthorized traffic in closed road/street sections, with the most serious commonly cited problems including damages to contractor work, theft, and vandalism. Significant and costly damages to finished work have occurred for many agencies.
- Most law enforcement officers do not feel the current Iowa Code reduces their authority to issue citations for traffic violations in closed road/street sections, but some modifications to provide clarification to certain sections would be beneficial.
- Many local agencies in particular would recommend strengthening current specifications to better clarify contractor responsibilities for TTC in closed road areas and raising penalties for nonperformance.
- Some counties receive good support from the sheriff’s office in monitoring the security of closed road sections and issuance of citations for unlawful entry.
- Public awareness of temporary traffic control requirements and procedures for work zones in general and closed road sections in particular could be improved.
- The current Iowa Code contains several provisions and penalties for violations of established traffic control, as well as theft/vandalism of traffic control devices, but enforcement and application of penalties vary widely across the state.
RECOMMENDATIONS

To address concerns and problems identified with law enforcement and temporary traffic control in closed road and street sections, the following recommendations are offered:

- Amend the MUTCD, Part 6, Temporary Traffic Control, to describe recommended TTC for closed road/street sections where authorized public travel is allowed.
- All agencies should ascertain that staff are familiar with and comply with MUTCD requirements for the use of “Road (Street) Closed” signs, especially Section 6F.08.
- Add language to state DOT specifications to require adequate TTC and protection for equipment in closed road/street sections where public travel is allowed. The TTC should closely replicate the expectations for open roadways (e.g., obstacles and hazards should be adequately delineated and/or protected, especially for nighttime hours).
- Agencies should strive to develop cooperative working relationships between transportation and law enforcement agencies to assure that TTC is properly designed, deployed, maintained, and enforced in work zones. This topic should be included in agenda issues for preconstruction conferences.
- Investigate the feasibility of technology solutions to control vandalism and unauthorized travel in closed road sections, including surveillance cameras.
- Provide information and data for driver education programs addressing safe travel through work zones, with a segment on authorized travel in closed road and street sections. This information could be furnished to driver education instructors or provided on a video for viewing at driver’s licensing stations.
- Revise appropriate sections of the Iowa Code to better clarify intent for enforcement in closed road/street sections, specifically Section 306.41 and 321.1 (78) to expand the definition of “Street” or “Highway” to include closed road/street sections open to authorized traffic.
- Develop best practice guidelines for temporary traffic control in closed road/street sections for distribution to state, county, and municipal transportation and traffic managers. The guidelines should include a description of the regulatory process for official establishment of closures, as well as suggestions for effective temporary control of authorized traffic during construction and maintenance activities or special events.
- For the purpose of future research, the Iowa DOT should consider characterizing crashes that occur in and tort claims arising from incidents that occur inside of closed road/street sections. Current databases do not include information with this specificity.
- Conduct a survey of state and local agencies to obtain an approximation of the actual cost of theft, vandalism, and damages from both authorized and unauthorized traffic in closed road/street sections. Publish the results for better agency and public appreciation for the scope of concern.
REFERENCES


