

ITE Committee Report Summary

GUIDELINES FOR THE ACTIVATION, MODIFICATION, OR REMOVAL OF TRAFFIC SIGNAL CONTROL SYSTEMS: AN ITE PROPOSED RECOMMENDED PRACTICE

By Nazir Lalani, P.E.

The following is a summary of a proposed recommended practice of the Institute of Transportation Engineers (ITE), prepared by the Public Agency Council Committee PAC-101-03. The full report provides guidance for turning on new traffic control signals and modifying the operations of traffic control signals as well as for the removal or deactivation of traffic control signals.

Comments on the report are being sought to assist in the consideration for adoption as a recommended practice of ITE. Comments or questions should be submitted by March 31, 2004 to Lisa Fontana Tierney, Technical Projects Senior Director, ITE, 1099 14th St., NW, Suite 300 West, Washington, DC 20025-3438 USA.

In 2002, the Public Agency Council decided to undertake the development of a recommended practice to provide guidance to public agencies. One of the primary responsibilities of public agencies is to install, operate, maintain and upgrade traffic control signals at a variety of intersections. To initiate the process, ITE members were invited to participate in a roundtable discussion at the ITE Annual Meeting and Exhibit in Philadelphia, PA, USA, on August 4, 2002. The roundtable participants formed a committee to discuss critical points that the proposed recommended practice should address.

The committee suggested the development of a proposed recommended practice to establish the following procedures for traffic control signals:

- Activation;
- Modification of operation; and
- Removal or deactivation.

After the roundtable discussion, the committee assembled existing information, including articles; chapters from existing manuals and handbooks; and procedures in use by state highway departments and local agencies. This information was used to develop the first draft of the *Guidelines for the Activation, Modification, or Removal of Traffic Signal Control Systems*, which became the basis for establishing the proposed recommended practice.

The guidelines address a variety of topics, including signing, striping and traffic control, that need to be addressed when traffic control signals are first turned on as well as when existing traffic control signals are modified or removed.

The guidelines are based not only upon the existing information found during the initial research but also upon the collective experience of the committee members. The report should not supersede engineering judgment or accepted local practice. It is anticipated that this proposed recommended practice will be updated periodically to refine the procedures based on the experiences of agencies using it.

Highlights from the principal sections of the guidelines are summarized below.

CHAPTER 1: INTRODUCTION

Experience has shown that there is a significant potential for traffic collisions to occur immediately before, during, or shortly after:

- New traffic control signals are activated;
- Operations of traffic control signals are modified significantly; or
- Traffic control signals are removed and replaced with some other form of traffic control.

The potential for collisions is of concern to the general public as well as public agencies responsible for the operation of traffic control signals. Due to the lack of nationally accepted procedures for activating, modifying, or removing traffic control signals, the Public Agency Council decided to develop a set of guidelines.

CHAPTER 2: SOURCES OF INFORMATION

Initial Literature Review

To develop the procedures, the following handbooks and manuals were reviewed:

- *Manual of Traffic Signal Design*¹
- "Traffic Control Signal Inspection Study Guide"²
- *Manual on Uniform Traffic Control Devices (MUTCD)*³
- *Traffic Control Devices Handbook*⁴
- *Traffic Engineering Handbook*⁵

Membership Survey

ITE Traffic Engineering Council members were contacted via the council's listserve to identify comprehensive procedures.

Traffic Engineering Council Newsletter Article

Based upon the literature review and membership survey, an article entitled "Procedures for Activating New Traffic Control Signals" was published in the Traffic Engineering Council newsletter.⁶ In the article, the authors summarized their findings, published a draft set of procedures for activating new traffic control signals and invited input from ITE members. This input was incorporated into the proposed recommended practice.

Roundtable Discussion at the ITE 2002 Annual Meeting and Exhibit

ITE members were invited to participate in a roundtable discussion of the proposed recommended practice for activating, modifying, or removing traffic control signals at the ITE Annual Meeting and Exhibit in Philadelphia, PA, USA, on August 4, 2002. A committee was formed from the roundtable participants.

CHAPTER 3: NEW TRAFFIC CONTROL SIGNAL ACTIVATION

This section of the report provides guidelines that public agencies and other organizations may incorporate into their overall procedures for activating new traffic control signals. Figure 1 shows a new traffic control signal under construction, with the intersection controlled by flag control personnel or STOP signs.

Phase 1 Procedures: Preparing for Full Activation

This section provides guidance on the procedures to be used when preparing to turn over a new traffic control signal installation to full stop-and-go operations, including when signal heads should be installed; the establishment of a turn-on schedule; equipment testing; signal timing preparation; and use of "Signal Ahead" signs, such as the one shown in Figure 2. This section also addresses optimal time periods for activating new traffic control signals.

Phase 2 Procedures: Prior to Turn-On

This section covers items of work that need to be completed immediately prior to turning over a traffic control signal to full stop-and-go operations. Testing and checking final equipment; aiming signal faces; checking sight distance and signal head visibility; changing signing and striping; tagging cables; placing documents in the controller cabinet; marking pavements and changing signs; entering signal timing data; and traffic control during turn-on are discussed. Figure 3 shows a diagram illustrating the phasing and layout of an intersection, provided in a traffic control signal controller cabinet in The Netherlands.



Figure 1. New traffic control signal under construction in Helena, MT, USA.



Figure 2. "Signal Ahead" sign with activated flashers in Quebec City, Quebec, Canada.

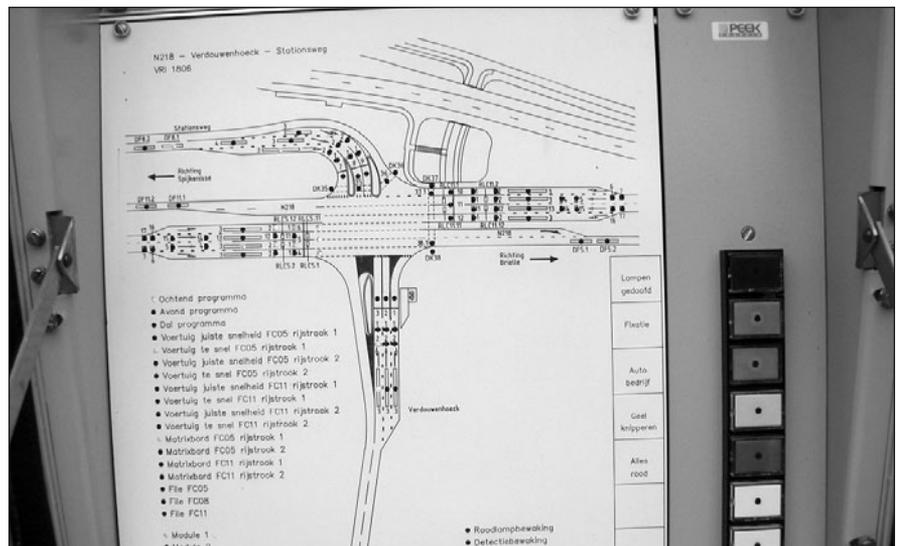


Figure 3. A diagram illustrating the phasing and layout of an intersection, in a traffic control signal controller cabinet in The Netherlands.



Figure 4. A sunburst style sign alerts drivers to a new traffic control signal in Ontario, Canada.

Phase 3 Procedures: Activating Full Operations

This section discusses procedures following the successful completion of Phase 2—activating full stop-and-go operations. The placement of temporary orange flags on “Signal Ahead” signs to attract driver attention to the traffic control change is discussed. Other discussion items include fine-tuning the aiming of signal faces and modifying signal timing based on actual traffic flow patterns after the traffic signal is turned on. Figure 4 shows an example of a sign used in Ontario, Canada, to alert drivers to the presence of a new traffic control signal that has been activated to full stop-and-go operations.

Phase 4 Procedures: Assumption of Maintenance

In jurisdictions that contract out traffic control signal construction, a new traffic control signal installed at an intersection should be considered a separate entity, not under the ownership of the agency or organization that has hired the contractor to complete its installation. Procedures relating to the ownership, maintenance and operational responsibility for traffic control signals are covered in this section of the report.

Phase 5 Procedures: Post Turn-On Notifications

After a traffic control signal is turned on, the responsible agency or organization should notify all interested or affected local and state agency transportation and maintenance staff; the power supplier; local law enforcement officers; and emergency service providers. The letter of notification should include the project number (if any); the location of the new signal; the date and time of activation to full operations; maintenance responsibilities; the name of the power supplier and project engineer; the power supply meter location; dates of warranties; and vertical clearances of items suspended over the roadway.

CHAPTER 4: TRAFFIC CONTROL SIGNAL MODIFICATIONS

Existing traffic control signals may need to be modified from time to time to meet changing traffic conditions. Modifications may involve merely changing traffic control signal timing, changing phase sequencing for coordination purposes, or adding a left- or right-turn phase. In contrast, modifications may involve more substantial changes, such as adding additional

approaches and turn lanes, implementing opposed phase operations, restricting movements, removing turn phases or converting from split or protected left-turn phases to protected/permissive operations, or modifying median islands to remove movements from traffic control signal control.

Procedures need to be followed during the construction of more substantial modifications, for which traffic control signals need to be turned off temporarily. The report covers topics including traffic control during the project; suitable time periods during which modifications should be undertaken; and responsibilities of the contractor versus the public agency or entity ultimately responsible for operating a modified traffic control signal.

CHAPTER 5: TRAFFIC CONTROL SIGNAL REMOVAL

The proposed recommended practice does not address the decision-making process for removing traffic control signals. This is well documented in various references, including the “User Guide For Removal of Not Needed Traffic Signals.”⁷ Once the appropriate engineering studies are complete and a decision has been made to remove traffic control signals, this section of the report provides guidance on the procedures that should be followed if a signal is to be replaced by STOP sign control.

Public Notification

This section covers public notification using news releases and on-street signing.

Permanent Deactivation

The procedures for permanently deactivating a traffic control signal are addressed in this section. Topics include flashing signals prior to permanent deactivation; traffic control post deactivation; the timing of traffic signal control removal; the posting of new traffic control devices, such as the STOP signs with orange flags depicted in Figure 5; and post-deactivation monitoring.

Temporary Deactivation

This section describes procedures to be used if a traffic control signal is temporarily deactivated.

Activation and Removal of Temporary and Portable Signals

A temporary traffic control signal is defined in MUTCD as a traffic control signal that is installed for a limited time period.⁸ A portable traffic control signal is defined as a temporary traffic control signal designed so that it can be transported easily and reused at different locations.

Temporary traffic control signals generally are installed using methods that minimize the costs of installation, relocation and/or removal. Typical temporary signals are for specific purposes, such as one-lane, two-way facilities in temporary traffic control zones, a haul road intersection, or access to a site that will have a permanent access point developed at another location in the near future. Figure 6 shows a portable traffic control signal providing one-lane, two-way traffic flow around a construction zone. ■

References

1. *Manual of Traffic Signal Design*. Washington, DC, USA: Institute of Transportation Engineers (ITE), 1991.
2. "Traffic Control Signal Inspection Study Guide." International Municipal Signal Association, 1999.
3. *Manual on Uniform Traffic Control Devices (MUTCD)*. Washington, DC: Federal Highway Administration (FHWA), 2000.
4. *Traffic Control Devices Handbook, 2nd Edition*. Washington, DC: ITE, 2001.
5. *Traffic Engineering Handbook, 5th Edition*. Washington, DC: ITE, 1999.
6. "Procedures for Activating New Traffic Control Signals." *Traffic Engineering Council Update* (ITE Traffic Engineering Council newsletter).
7. JHK & Associates and Wagner-McGee Associates. "User Guide For Removal of Not Needed Traffic Signals." Implementation Package FHWA-IP-80-12. Washington, DC: FHWA, 1980
8. MUTCD, note 3 above.



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Figure 5. "Stop Ahead" sign with orange flags.



Figure 6. A portable traffic control signal providing one-lane, two-way traffic flow around a construction zone.

These guidelines were developed by ITE's Public Agency Council Committee PAC-101-03. Members of the committee were: Nazir Lalani, P.E. (F), Chair; Rock Miller, P.E., PTOE (F), Vice Chair; Ahmed E. Aburahmah, P.E., PTOE (F); David F. Allyn, P.E. (M); Rick A. Berry, P.E. (M); W. Martin Bretherton Jr., P.E. (F); Ray H. Burke, P.E. (F); Robert W. Crommelin, P.E., PTOE (H); John A. Davis, P.E., PTOE (F); Dan M. Dulaski, P.E. (M); R. Marshall Elizer Jr., P.E., PTOE (F); James W. Ellison, P.E. (F); Emad H. Elshafei, P.E., PTOE (M); John E. Fisher, P.E., PTOE (F); Keith B. Franklin (LAF); Jennifer L. Gallagher, P.E. (M); Hal P. Garfield, P.E. (FL); Jim R. Helmer, P.E., PTOE (F); Bill C. Kloos, P.E. (F); James Landles; Ginger Russell (IA); Sean F. Skehan, P.E.,

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Member of the review panel were: Patti K. Boekamp, P.E. (F); Gene G. Chartier, P. Eng. (M); Geraldine D. de Leon (A); Bruce E. Friedman, P.E., PTOE (F); and John Halkias, P.E. (M).

ORDERING INFORMATION

The full report (Publ. No. RP-034) may be purchased from the ITE Bookstore (\$25 for members, \$30 for nonmembers). To order, please see page 57 of this issue of *ITE Journal*, visit ITE on the Web at www.ite.org, or contact ITE, 1099 14th St., NW, Suite 300 West, Washington, DC 20025-3438 USA; +1 202-289-0222; fax: +1 202-289-7722.