Responding to Requests for Traffic Signals That May Not Meet the Warrants of the MUTCD

Prepared by Ken Winter, July 2006

KEY SEARCH TERMS:

Warrants
Traffic Signals
Traffic Signal Warrants
Traffic Control Devices

Research Synthesis Bibliography No. 2

Research Synthesis Bibliographies (RSBs) are distillations of the most relevant transportation research on current topics of interest to VDOT researchers, engineers, and policy/decision makers. All sources cited are available for immediate loan to any VDOT employee through the VDOT Research Library.
Unwarranted Signals May Exacerbate Problems They Are Designed to Relieve

When warranted, signals offer an effective method for controlling traffic at intersections and eliminating conflicts in general. But what happens when unwarranted or marginally warranted signals are installed? Could such an act have a negative impact on crash rates, traffic flow, pedestrian volume, or other important issues?

DOTs rely on the 8 warrants outlined in the Manual on Uniform Traffic Control Devices (http://mutcd.fhwa.dot.gov/) to help determine where signals are justified. In addition, many states use a state supplement to help address unique needs. Such is the case in Virginia, where the National MUTCD was adopted for use in 1989 and "Part VI," the state supplement, became effective in 2003. States also rely on engineering studies of intersections in making individual determinations.

A literature search reveals that many states also rely on a set of guidelines for traffic signal warrant analysis to determine when to remove signals that are no longer warranted. This can help DOT officials make consistent decisions…and explain the resulting outcomes to political or community groups. For a good overview of warrants for traffic signals, researchers will want to consult the following:


These other items listed in this bibliography can be checked out through the VDOT Research Library

--- Ken Winter, MLIS

OVERVIEW

Research Synthesis Bibliographies (RSBs) are selected lists of resources on current topics of interest to VDOT employees or divisions. When available, links to online documents are provided.

RSBs are “selective listings” of holdings, organized and distilled from the larger universe of research materials in order to save the researcher’s time. Selection criteria used by library staff include authority, relevance, and timeliness. Most items listed here are held by the Library, though some listings may be present for items that we believe we can quickly borrow from other libraries.

GETTING RESOURCES LISTED HERE

Full text copies of all resources listed in this document are available in the VDOT Research Library’s collections, or through Interlibrary loan. through the Library. In many cases, the Library owns both virtual and hard copies of documents, as well as formats such as CD-ROM.

Library staff is available Monday-Friday 8:00-5:00. Don’t hesitate to contact us if you have a reference question, a question about our lending policies, or need any other kind of help.

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**Cambridge's Traffic Calming Program Pedestrians are the Focus**

**PUB. DATE:** 2000


**ABSTRACT:** Cities throughout North America are learning from European examples that traffic calming is an important tool for reducing the negative impacts of vehicles and for reclaiming our cities for the residents. Traffic calming provides an alternative for engineers working with residents demanding unwarranted traffic control devices to control excessive speeds. Speeding is a major problem with serious consequences. At higher speeds it takes longer for drivers to stop. This increased stopping distance makes it harder to avoid crashes. In addition, higher speeds result in more severe crashes. Pedestrians are particularly susceptible to increases in the severity of crashes. A 1991 study in the United Kingdom studied the relationship between the severity of pedestrian injuries and the speed of vehicles. At 20 mph only 5% of pedestrians are killed. This increases to 85% at 40 mph. As speeds increase the severity of injuries increases significantly. Traffic calming reduces speeds and improves the safety and comfort level of all users: pedestrians, cyclists, motorists and residents, by making physical changes to streets. Cambridge's program, while considering all users, focuses on pedestrians. This lead to the use of traffic calming tools that most directly benefit pedestrians and also to evaluation criteria that measure the benefits of projects to pedestrians.  

**SOURCE:** Watkins KF and Institute of Transportation Engineers, 1099 14th Street, NW, Washington, DC, 20005-3438, USA.  

**KEYWORDS:** Bicycles, Collision avoidance systems, Massachusetts, Pedestrian safety, Pedestrians, Traffic calming, Traffic control devices, Traffic speed

**CALL #:** CD-ROM TA 1005.I52r

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**Candidate Signal Warrants From Gap Data--Technical Report.**

**PUB. DATE:** 1983

**ABSTRACT:** This report describes a method of determining the need for a traffic signal using site-specific information on gaps in the major road traffic. Formulas relating delay to the ratio of side street volume and gaps available on the major road (analogous to the volume/capacity ratio) were derived from data collected at 43 intersections using automatic gap counters. The formulas were further validated at 18 intersections. The results show that the volume to gap ratio is an accurate estimator of side street delay and that the gap based warrant is an accurate indicator of signal need when compared to engineering judgement. The gap based warrant is generally more restrictive than existing signal warrants. The method consists of collecting the number and size of gaps during a four hour period using a modified volume counter or commercially available gap counter. Using known information about driver gap acceptance, the gap data is converted to an equivalent number of adequate gaps (known as the gap availability parameter). The side street volume and gap availability parameter are plotted on an analysis diagram which shows average side street delay. If the average side street delay exceeds the threshold value of tolerable delay for the community (e.g., 25 seconds per vehicle) then a signal may be warranted. Gap-based signal warrants for peak hour conditions and pedestrian considerations are also included. (FHWA)  

**SOURCE:** L. G. Neudorff.  

**KEYWORDS:** Gap acceptance, Highway capacity, Peak hour traffic, Pedestrian protection, Pedestrian safety, Traffic capacity, Traffic delay, Traffic signal warrants, Traffic volume,
**Crash experience warrant for traffic signals.**

**PUB. DATE:** 2003  
**SOURCE:** Note(s): At head of title: National Cooperative Highway Research Program./"Research sponsored by the American Association of State Highway and Transportation Officials in cooperation with the Federal Highway Administration."/ Includes bibliographical references.; Responsibility: Hugh McGee, Sunil Taori, and Bhagwant Persaud.; Entry: 20030630; Update: 20040223.  
**SOURCE:** Hugh W. McGee, Sunil Taori and Bhagwant Naraine Persaud, et al.  
**ABSTRACT:** This report describes a process for estimating the safety impacts of installing or removing traffic control signals and recommends an improved Crash Experience warrant for the Manual on Uniform Traffic Control Devices (MUTCD). The estimation process can be used during the engineering study to determine if a traffic signal will improve the overall safety of the intersection. The report will be useful to traffic engineers determining the most appropriate traffic control device for an intersection...or the decision to install any traffic control device at all.  
**KEYWORDS:** 1 v. (various pagings), Traffic signs and signals, Electronic traffic controls, Roads -- Interchanges and intersections -- Safety measures, Traffic safety

**Crash Reductions Related to Traffic Signal Removal in Philadelphia.**

**PUB. DATE:** 1997  
**SOURCE:** ACCIDENT ANALYSIS & PREVENTION. 1997/11. 29(6) pp803-10 (16 Refs.); SC: ACCIDENTS-AND-THE-ROAD (82); TRAFFIC-CONTROL (73).  
**ABSTRACT:** The effect on intersection crashes of converting one-way street intersections in Philadelphia from signal to multiway stop sign control was estimated. Using crash and traffic volume data for a comparison group, regression models were computed to represent the normal crash experience of signal controlled intersections of one-way streets, by impact type, as a function of traffic volume. An empirical Bayesian procedure was used to estimate what would have been the expected number of crashes at the converted intersections had they not been converted. The empirical Bayesian estimates were compared with actual counts of crashes after conversion. Estimates were obtained for different classes of crashes categorized by impact type, day/night conditions, and impact severity. Aggregate results indicate that replacing signals by multiway stop signs on one-way streets is associated with a reduction in crashes of approximately 24%, combining all severities, light conditions, and impact types. (Author/publisher).  
**SOURCE:** PERSAUD B (RYERSON POLY UNIV, TORONTO, CANADA), HAUER E (TORONTO UNIV, CANADA), RETTING R (INSURANCE INST HIGHWAY SAFETY, USA), VALLURUPALLI R (TORONTO UNIV, CANADA) and MUCSI K (REG MUNICIPALITY OTTAWA CARLETON, CANADA).  
**KEYWORDS:** ACCIDENT RATE, 1612, DECREASE, 9009, ACCIDENT PREVENTION, 1661, TRAFFIC SIGNAL, 0565, JUNCTION, 0455, MODIFICATION, 9048, URBAN AREA, 0313, USA, 8122, PROBABILITY, 6534, ANALYSIS MATH, 6471, SIGNIFICANCE STAT, 6532

**Criteria For Removing Traffic Signals. Final Technical Report.**

**PUB. DATE:** 1980  
**SOURCE:** See also HS-030 968.
ABSTRACT: Results are presented of a study to develop criteria and procedures for the
removal of existing traffic control signals. Development of the signal removal criteria was
based largely on precedent, as in a legal argument. Cases where positive impacts were
realized by removing signals served to identify the criteria and conditions for removing other
signals. Cases involving negative impacts or unsuccessful removal attempts were reviewed to
identify conditions under which signal removal should not be pursued. Traffic signal removal
experiences at over 200 intersections in 31 political entities were compiled and summarized,
and this information was analyzed to provide an objective base for the development of signal
removal criteria. The decision process is designed to allow the traffic engineer to predict the
impacts to be expected from the removal of a traffic signal at a particular intersection:
intersection safety, traffic flow, energy consumption and costs. The traffic engineer can then
make a sound decision concerning the removal of a signal. The details of the signal removal
criteria are documented, including data collection; signal removal process characteristics;
characteristics of signal removal data base; accident impacts; stops, delays and fuel
consumption impacts; cost impacts; analysis of unsuccessful signal removal attempts; traffic
signal removal decision process; and development of signal removal procedural guidelines
(public notification, interim control methods, follow-up information needs).
KEYWORDS: Case studies, Costs, Criteria, Decision making, Forecasting, Guidelines, Impacts,
Prediction, Removal, Traffic flow, Traffic safety, Traffic signals
CALL #: TE 228.C74 1980

Do Traffic Signals Ever Become Too Unwarranted?
PUB. DATE: 1981
ABSTRACT: This article discusses the considerations necessary when making the decision to
remove a traffic signal. It includes a list and discussion of situations that have led to the
removal of a traffic signal, a list and discussion of the eight different warrants for traffic
signals found in the "Manual on Uniform Traffic Control Devices", and a discussion of the
factors that affect accident rates after signal removal. It is recommended that, to minimize the
possibility of an increase in accidents, the signal should be set to the flashing mode, rather
than bagged or disconnected, for at least 30 days after stop signs are installed. An inset
accompanying this article addresses the topic of financial benefits of signal removal both for
the city and for the driver.
SOURCE: Anonymous
KEYWORDS: Accident rates, Decision making, Economic benefits, Flashing traffic signals,
Recommendations, Removal, Traffic signal warrants, Warrants (Traffic control devices)
CALL #: Recommend pursuing through Interlibrary Loan.

An Expert System for Advising Removal of Traffic Signals
PUB. DATE: 1990
SOURCE: COMPENDIUM OF TECHNICAL PAPERS. INSTITUTE OF TRANSPORTATION
ENGINEERS 60TH ANNUAL MEETING, ORLANDO, FLORIDA AUGUST 5-8, 1990. SESSION 19.
TRAFFIC OPERATIONS ANALYSIS WITH MICROCOMPUTERS
: 1990.; NT: OTHER PHYS. DESCRIPTION: 1 VOL. VARIOUS FOLIATIONS ILLUSTRATED
THESIS M.S.--UNIVERSITY OF CINCINNATI, 1990 INCLUDES BIBLIOGRAPHICAL REFERENCES
INCLUDES ABSTRACT.
ABSTRACT: No abstract provided.
SOURCE: MUSA M.
**Impacts Of Traffic Signal Installation At Marginally Warranted Intersections**

**PUB. DATE: 1996**

**SOURCE:** Research project title: Impacts of Traffic Signal Installation at Marginally Warranted Intersections.

**ABSTRACT:** This report documents the development of guidelines for the decision whether to install a traffic signal at a marginally warranted intersection. The recommendations are based on field and simulation studies of a number of intersections across Texas which were identified as marginally warranted by various Texas Department of Transportation (TxDOT) districts. The research included both delay and accident studies. The TEXAS simulation model was used for the delay studies. Eight different intersection geometries and twelve generic 24-hour volume patterns representing marginally warranted conditions were simulated. Each combination of intersection geometry and volume pattern was simulated as a two-way stop, an all-way stop, and an actuated traffic signal. Safety studies considered the frequency of accidents by severity and accident type. Five years of accident data were analyzed at each of the seventy-two marginally warranted intersections across the state. The intersections were classified into six groups, namely, low-speed rural, low-speed urban, high-speed rural, high-speed urban, rural by population, or rural by MUTCD definition. The simulation results showed that in all cases studied, actuated traffic signals yielded significantly greater delays than two-way stops, and all-way stop control generated significantly greater delays than actuated traffic signals. However, in one out of the six intersection categories, namely low-speed rural conditions, signalization showed the potential to significantly reduce certain types of accidents.

**SOURCE:** J. C. Williams and S. A. Ardekani.

**KEYWORDS:** Accident severity, Accident types, Field studies, Four way stop signs, Geometric design, High speed, High speed vehicles, Intersections, Low speed, Low volume roads, Multiway stop signs, Rural areas, Rural intersections, Simulation, Speed, Stop signs, Traffic accidents, Traffic actuated controllers, traffic actuated signals, Traffic delay, Traffic safety, Traffic signal warrants, Traffic speed, Two way stop signs, Urban areas, Urban intersections, Warrants (Traffic control devices)

**CALL #: TE 228.W56 1996**

**Improving Traffic Signal Operations: A Primer**

**PUB. DATE: 1995**

**ABSTRACT:** This report describes how some relatively simple, low-cost adjustments to a traffic signal system can reduce traffic congestion and lead to big payoffs in time savings, environmental benefits, and safety. The report is organized in the following seven chapters: (1) Traffic Signals: Tools for Improving Safety and Traffic Flow; (2) Simple Strategies with Big Payoffs; (3) How Traffic Signals Work; (4) When Is a Signal Needed?; (5) Traffic Signal Maintenance; (6) Legal Aspects; and (7) Funding Traffic Signal Improvements.

**SOURCE:** J. M. Morales.


**CALL #: TES 228 .I47x 1995**
**Ite Committee Report Summary: Guidelines for the Activation, Modification, Or Removal of Traffic Signal Control Systems: an Ite Proposed Recommended Practice.**

PUB. DATE: 2004


ABSTRACT: This document, from a set of conference proceedings on Intersection Safety: Achieving Solutions Through Partnerships (March 2004, Irvine, California), 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 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 first section covers 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. This section also addresses optimal time periods for activating new traffic control signals. 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. The procedures covered for removing an existing traffic signal include the use of 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 STOP signs with orange flags; and post-deactivation monitoring. These guidelines are based not only upon the existing information found during the initial research but also upon the collective experience of the committee members. This document is a reprint of an article that appeared in the ITE Journal, February 2004.

SOURCE: Lalani N and Institute of Transportation Engineers, 1099 14th Street, NW, Washington, DC, 20005-3438, USA.

KEYWORDS: Conferences, Guidelines, Installation, Intersections, Policy, legislation and regulation, Striping, Traffic control devices, Traffic safety, Traffic signal timing, Traffic signals, Traffic signs

CALL #: Recommend pursuing through Interlibrary loan.

**A New Signal Warrant for Practicing Traffic Engineers - Turning Conflicts.**

PUB. DATE: 1994


ABSTRACT: This study tries to develop a new signal warrant that will minimize the number of unjustified traffic signals that are "warranted" and provide an easy data collection procedure and produce a warrant that is easy to apply. The new warrant requires peak-hour turning movements for 2-hours in the AM and 2-hours in the PM. This information creates the data to use the "turning conflict" analysis. The warrant is a turn conflict warrant for a "T" intersection and an "X" intersection. A single spreadsheet will be needed to perform this analysis.

SOURCE: Bretherton WM, Elhaj M and Institute of Transportation Engineers, 525 School Street, SW, Suite 410, Washington, DC, 20024-2729, USA.
Probabilistic approach to implementing traffic signal warrants

PUB. DATE: 2000
:ill. ; 28 cm; (OCoLC)8674831; Note(s): Includes bibliographical references (p. 342).;
Responsibility: Byungkyu "Brian" Park, Nagui M. Routhail, Joseph E. Hummer.; Entry:
20001103; Update: 20001103.
SOURCE: Byungkyu Park, Nagui M. Routhail and Joseph E. Hummer.
KEYWORDS: Electronic traffic controls, Traffic signs and signals, warrants (traffic control devices)
CALL #: VDOT Research Library Periodicals Section (e-journals)

Revising The Traffic Signal Warrants To Better Accommodate Pedestrians And Cyclists

PUB. DATE: 2001
SOURCE: Research Project Title: Revising the Pedestrian Warrant for the Installation of a Traffic Signal.
ABSTRACT: This report documents the activities of an 11-month research project that considered various pedestrian-related factors and developed revised warrants for the installation of a traffic signal that are more sensitive to pedestrians and cyclists. Three warrant recommendations were made as a result of this research. The recommendations are summarized below with the warrants that are affected for each recommendation. The research shows that results from warrant analyses with the revised warrants better match professional engineering judgment than the results of warrant analyses using the current warrants. The warrant recommendations should not be used until they are officially adopted by the Texas Department of Transportation. The recommendations are: (1) Include pedestrians and cyclists in the minor-street approach volumes for all warrants that currently consider only vehicles for the minor-street approach volumes (Warrants 1, 2, 9, 10, 11, and 12); (2) Include a 30% volume reduction factor in the above warrants based upon the presence of certain types of pedestrian trip generators such as medical facilities, pedestrian transportation facilities, and activity centers serving pedestrians (Warrants 1, 2, 3, 9, 11, and 12); and (3) Change the existing pedestrian warrant to a mid-block only pedestrian crossing warrant, remove language about pedestrian crossing speeds, and add a reduction factor for high-speed roadways or built-up areas (Warrant 3).
KEYWORDS: Cyclists, Pedestrians, Recommendations, Texas, Traffic signals, Warrants (Traffic control devices)
CALL #: Recommend pursuing through Interlibrary loan.

Some Effects Of Unwarranted Traffic Signals.

PUB. DATE: 1979
ABSTRACT: The objective of this study was to provide traffic engineers with factual evidence of the detrimental impacts which occur when traffic signals are installed before they are required. A total of ten intersections from the Greater Lafayette area were studied. They included three signalized intersections and seven STOP sign controlled intersections. The performance of each study intersection was examined and evaluated with respect to travel

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delay through the intersection and accident frequency. A simulation package, NETSIM, was also employed at some of the intersections to investigate the performance of traffic flow under different types of intersection controls. It was found that unwarranted traffic signals invariably increase the total intersection delay. At three unwarranted signalized locations, cumulative travel delay ranging from 3200 to 4200 vehicle-hours were wasted in 1978 by the major-street traffic. Whereas at another study intersection, the conversion from traffic signal control to two-way STOP control saved 10,340 vehicle-hours in 1978 without any accident increase. Of the 10,340 vehicle-hours saved, approximately 30 percent of them were by the minor-street traffic. (Author)
SOURCE: C-C Liu.
KEYWORDS: Signalized intersections, Stop signs, Traffic delay, Traffic flow, Traffic signals
CALL #: Recommend pursuing through Interlibrary loan.


PUB. DATE: 1994
SOURCE: SO: 1994. pp90 (Figs., Tabs., Refs., 3 App.); NT: Appendices are bound separately as follows: Appendix A - SIGEVAL User's Guide (16 pages); Appendix B - SIGEVAL Program Documentation (200 pages); and Appendix C - Intersection Collision Diagrams (112 pages); RN: Report Number: MDOT-RD-94-104; SC: OPERATIONS-AND-TRAFFIC-CONTROL (H54); TRAFFIC-CONTROL (I73).
ABSTRACT: In December, 1984, amendments were adopted for the Manual on Uniform Traffic Control Devices (MUTCD) that provided for changes in the applications of 8- and 12-in. lenses, visibility and shielding, and number and location of signal faces. The amendments were designed to provide greater uniformity and improve the performance of traffic signals. A 10-year compliance period was provided with a compliance date of December 31, 1994. The Mississippi Department of Transportation (MDOT) is currently responsible for the traffic control along all state highways. This also includes traffic control within the city limits of all cities with a population of 5,000 or less. In order to comply with the requirements of the MUTCD, and the December 31, 1994, deadline, a systematic method of evaluating the traffic control at over 150 intersections along the state-maintained highway system was needed. A computer program, SIGEVAL, was developed by the Department of Civil Engineering at the Mississippi State University (MSU) to assist in these evaluations of intersection traffic control. The computer program was designed to evaluate the all-way stop and traffic signal warrants, perform capacity analyses of the intersections for alternative stop-controlled schemes of traffic control and determine the cost benefits of removing unwarranted signal systems and replacing them with the most applicable stop-control alternative. A total of 141 intersections were evaluated using the SIGEVAL program.
SOURCE: Epps JW, Mississippi State University, Department of Civil Engineering, Mississippi State, MS, 39762, USA, Mississippi Department of Transportation, P.O. Box 1850, Jackson, MS, 39215, USA and Federal Highway Administration, 400 7th Street, SW, Washington, DC, 20590, USA.
KEYWORDS: MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, TRAFFIC SIGNAL WARRANTS, COMPLIANCE, COMPUTER PROGRAMS, EVALUATION, TRAFFIC CONTROL, INTERSECTIONS, STATE HIGHWAYS, MISSISSIPPI, STOP SIGNS, TRAFFIC CAPACITY, BENEFIT COST ANALYSIS, REMOVAL, REPLACING, TRAFFIC SIGNALS
CALL #: TE 228 .E67 1994

PUB. DATE: 2004
ABSTRACT: Traffic signals can be an effective intersection traffic control device only when they elicit the appropriate sequence of behavior by drivers, pedestrians, and bicyclists. This paper, from a set of conference proceedings on Intersection Safety: Achieving Solutions Through Partnerships (March 2004, Irvine, California), reviews the benefits and disadvantages of traffic signals, and outlines the appropriate steps to incorporating traffic signals in an intersection. The author stresses that the signal indications must first be detected in its environment, which may be visually complex. The signal indications must then be perceived and understood in sufficient time to allow the user to make decisions and safely perform necessary maneuvers. The author discusses the Manual on Uniform Traffic Control Devices (MUTCD) from the Federal Highway Administration; traffic signal control modes of operation, including pre-timed control, traffic-actuated control, and density control; traffic signal phasing, including left-turn phasing, delay, capacity, and phasing to reduce pedestrian conflicts; signal preemption; flashing operation; cycle length; phase change intervals, including green intervals and pedestrian intervals; controller settings and detection for dilemma zone protection; active warning signs for high-speed approaches; design and enforcement to reduce red-light running; visibility requirements, including treatments to improve signal visibility and conspicuity; and guidelines for signal removal. The author reiterates that traffic control signals, if properly designed and installed, can be expected to reduce the frequency and severity of a number of different types of crashes.

SOURCE: Seyfried RK and Institute of Transportation Engineers, 1099 14th Street, NW, Washington, DC, 20005-3438, USA.

KEYWORDS: Accident causes, Conferences, Federal Highway Administration, Flashing traffic signals, Intersections, Manual on uniform traffic control devices, Pedestrians, Traffic actuated controllers, Traffic control devices, Traffic signal phases, Traffic signal timing, Traffic signals, Visibility

CALL #: Recommend pursuing through Interlibrary loan.

Traffic Calming through Traffic Signal Removal - City of Leslie.

PUB. DATE: 2001


ABSTRACT: The City of Leslie desired to modernize the only two signals in the city as part of the Bellevue Street improvement, financed by the Federal Highway Administration. However, warrant studies revealed that neither of the signals were warranted. It was recommended that the signal located at main downtown intersection be replaced by a four-way stop, and the other by a well regulated school flasher. Some city officials and a number of citizens objected to these recommendations, but after several meetings, the city council approved the removals. The four-way stop and the school flashers were then installed as part of the project. Unfortunately, no "before and after" speed studies were conducted, but city officials believe that Bellevue Street is calmer, now that motorists are no longer speeding up to the "green". The citizen complaints have all but disappeared.
Traffic Devices the Experts Like.

PUB. DATE: 1998


ABSTRACT: This article takes a look at specific traffic safety devices that are favored by traffic safety experts. These are: traffic signal timing; signals and lanes for left turns; traffic signal visibility; making time for pedestrians to cross; traffic signal removal; four-way stop signs; roundabouts; pavement markings; traffic calming; speed limits; skid-resistant pavement; illumination; roadside hazards.

SOURCE: Anonymous

KEYWORDS: TRAFFIC ENGINEERING, TRAFFIC SAFETY, TRAFFIC SIGNALS TIMING, LEFT TURN LANES, PEDESTRIAN CROSSINGS, FOUR WAY STOP SIGNS, ROUNDABOUT, SKID RESISTANCE

Traffic Signal Guidelines Get A "Green Light"

PUB. DATE: 1999


ABSTRACT: The warranting process for traffic signals has evolved with changing technology and traffic needs over the last 60 years. A 1997 accident involving a school bus prompted the Texas Department of Transportation (TxDOT) and Texas Transportation Institute researchers to take an in-depth look at the warrants that help determine traffic signal justification. The project's outcome is a set of comprehensive, uniform guidelines for conducting traffic signal warrant analyses. The new guidelines clarify issues open to interpretation, improve the consistency of decisions, and provide a way to explain resulting outcomes. Based on these clarifying guidelines, the warranting process provides reliable, consistent results that offer a clear indication of whether the conditions justify further consideration of a traffic signal. The process leaves room for all evaluations that affect the decision to place or remove a traffic signal and promotes statewide consistency in the warranting process. The guidelines publication was sent to TxDOT districts in September 1999.

SOURCE: P. Carlson.

KEYWORDS: Guidelines, Location, Manual on Uniform Traffic Control Devices, Texas, Traffic engineering, Traffic safety, Traffic signals, Warrants (Traffic control devices)

LINK: http://tti.tamu.edu/researcher/newsletter.asp?vol=35&issue=4&article=1

Traffic signal inventory project

PUB. DATE: 2001

ABSTRACT: The purpose of this study was to determine the level of compliance with the "Manual on Uniform Traffic Control Devices" (MUTCD) and other industry standards of traffic signals on the Iowa state highway system. Signals were randomly selected in cities with a population less than 5,000. It was found that several intersections need to be addressed immediately to correct clearance timing settings. Red clearance intervals were frequently too short. A handful of intersections had inadequate pedestrian clearance times. Six intersections
had at least one yellow clearance interval that did not meet Institute of Transportation Engineers standards. Some of the intersections likely would not meet traffic signal warrants and should be investigated for possible removal. The most common problem found with traffic signals was a lack of maintenance. Many of the signals had at least one of the following problems: burned out lights, pedestrian lenses in need of replacement, dirty cabinet/missing or poor filter, missing visors, or inoperative pedestrian push buttons. Timing sheets were frequently missing or out of date. Another frequent noncompliance issue was the use of backplates. The MUTCD states that backplates should be used on signals viewed against a bright sky. The majority of signals inventoried did not have backplates on the mast-arm mounted signals. The timing at some intersections could likely be improved by reducing the cycle length. Where there were multiple signals in close proximity rarely was there any attempt at signal coordination. Finally, a number of intersections had equipment that by today's standards would be considered obsolete.

SOURCE: Gary B. Thomas.


CALL #: TE 228 .T56  2001


Traffic signal warrants

PUB. DATE: 1997
SOURCE: Note(s): Caption title./ "Summer 1997"./
SOURCE: Steven Barber, Pennsylvania and Dept. of Transportation, et al.

KEYWORDS: Traffic signs and signals – Pennsylvania


PUB. DATE: 1998
ABSTRACT: Traffic signals are one of the most restrictive forms of traffic control that can be used at an intersection. In order to ensure that the use of traffic signals is limited to favorable situations, a series of traffic signal warrants has been developed to define the minimum traffic conditions that must be present before signal installation can be considered. Installation of a traffic signal should not be considered if the traffic conditions do not meet the minimum criteria established by at least one of the warrants. The use of traffic signals and the related signal warrants can be complicated. The general public, elected and government officials, and even some practitioners, often misunderstand the signal warrants. Furthermore, there is no recent document that provides a step-by-step description of the warranting process. This document provides transportation officials with detailed information about conducting a traffic signal warrant analysis. It addresses many of the issues that have typically been left to interpretation and is intended to improve the consistency of the warranting process.


KEYWORDS: Analysis, Guidelines, Traffic signals, Warrants (Traffic control devices)

CALL #: TE 228 .T7323 1998

Traffic Signal Warrants-A Bibliography.

PUB. DATE: 1975
ABSTRACT: This annotated bibliography of relevant literature was compiled in an effort to evaluate the adequacy of existing warrants in meeting current needs for determining whether a traffic signal should be installed, and to determine the need for revised or additional warrants. The literature reviewed in the preparation of the bibliography was restricted to material published since 1967 and the references are restricted to those pertaining to traffic signal warrants for isolated intersections. The bibliography consists of 2 parts: the first covers the general subject area and contains 152 entries; The second, containing 29 entries, includes supplementary material on accident occurrence and costs.
SOURCE: Anonymous
KEYWORDS: Accident costs, Accident rates, Accidents, Bibliographies, Costs, Evaluation, Intersections, Reviews, Traffic signal warrants, Warrants (Traffic control devices)
CALL #: TA 1001.5 N32 no. 78

Undefeated by Traffic.
PUB. DATE: 1997
ABSTRACT: The Advanced Transportation Management System (ATMS) in Montgomery County, MD, USA, has many integrated subsystems that provide real-time traffic control, monitoring, and information functions. It is a fully integrated traffic and transit management system, designed for better management of the County’s transport infrastructure. The ATMS collects information from loop sensors, video cameras, and aircraft, then distributes it using every available method. This is made possible by its forward-thinking transport management team, and by installing a Fiber Net as an enhancement to the existing copper cable. The architecture for the extensive and sophisticated ATMS communication system is consistent with the USA’s National ITS Architecture. The devices that are linked include traffic signals, detection systems, variable message signs (VMS), video surveillance cameras, radio broadcast advisory systems, and other ITS systems. Without the ATMS, time spent on journeys to work in the County would rise by 75% and average travel speed would fall by up to 10mph. With the ATMS, there are substantial journey time improvements. Its coverage is expanded during snow and other emergencies, to help commuters to plan routes and to provide immediate information about road closures, snow removal, or other emergency efforts in the County.
SOURCE: ADEYINKA O (PB FARRADYNE, USA), DONALDSON G (MONTGOMERY COUNTY DPW, USA) and SNIEZEK E (FHWA, USA).
KEYWORDS: INTELLIGENT TRANSPORT SYSTEM, 8531, AREA TRAFFIC CONTROL, 0669, REAL TIME, 8679, CONTINUOUS, 9006, SURVEILLANCE, 9101, USA, 8122, DRIVER INFORMATION, 8572, PASSENGER INFORMATION, 8581, TRAFFIC SIGNAL, 0565, SENSOR, 6120, VARIABLE MESSAGE SIGN, 0574, VIDEO CAMERA, 6979, TELEMATICS
CALL #: VDOT Research Library Periodicals Section