

# KUTC Newsletter

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A Local Technical Assistance Program (LTAP) of The University of Kansas Transportation Center  
In cooperation with Kansas Department of Transportation and Federal Highway Administration

An issue dedicated to rules and regulations affecting highway agencies

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## The Third Element of Phase Two: Stormwater Drainage Systems

... by Lisa Harris .....

In previous articles we've described Phase Two water quality permit requirements for two types of municipal runoff—"industrial" and construction. This time



we will focus on the third element of Phase Two: municipal separate stormwater sewer systems, known as MS4s for short. See sidebar

for more information about what is considered an MS4.

Currently, under Phase One of the National Pollution Discharge Elimination System (NPDES), only three Kansas cities need permits for their MS4s: Wichita, Topeka, and Unified Government of Wyandotte County/Kansas City, Kansas. But that's about to change. Under the Phase Two stormwater permit regulations, municipalities that operate a storm sewer system within an urbanized area are automatically designated as regulated MS4s.

The regulations also require the Kansas Department of Health and Environment (KDHE) to evaluate all other municipalities outside urbanized areas with a population greater than 10,000, and designate any of these municipalities based on State-developed designation criteria.

Municipalities that are designated

### Which of these are considered part of a municipal stormwater sewer system (MS4)?

- a) underground stormwater pipes
- b) open culverts
- c) unlined drainage ditches
- d) drainage channels on bridges
- e) all of the above

The answer is all of the above, even ditches. If your municipality maintains any of its own roads, you have an MS4.

must then apply for a municipal stormwater permit. KDHE has identified 23 cities located in urbanized areas that were automatically designated as regulated MS4s, and has tentatively identified 20 municipalities located outside urbanized areas that will be designated.

### Which Kansas road departments are affected?

Any municipality is affected that has any portion of its jurisdiction located in a U.S. Census-defined urbanized area and that maintains its own road system with storm drainage either using pipelines or ditches. That includes cities, counties and some townships. KDOT may be affected as well.

There are also 20 new cities that are not located in urbanized areas but have popula-

*continued on page 2* ➤

## Phase Two for MS4s, *continued from page 1*

tions large enough (10,000-50,000) to fall under the new Phase Two permit process. These cities have been notified by KDHE that they will need to comply with Phase Two requirements.

### Are MS4 permit waivers available?

Yes. Waivers are available for municipalities in urbanized areas that have populations in that area less than 1,000. However, Rance Walker, manager for the MS4 program at the Kansas Department of Health and Environment, said a waiver would not be granted if there were “some known obvious insult to the aquatic environment” in that area due either partially or entirely to stormwater discharge.

### How do I find out whether we are in an “urbanized area” and if so, if we need to apply for an MS4 permit?

There are five Census-designated urbanized areas in Kansas, listed below. If your municipality is near any of the cities below, call Rance Walker at KDHE to find out if you need to apply for an MS4 permit. Contact information is at the end of this article.

#### *U.S. Census Urbanized Areas:*

Kansas City, MO—KS  
Lawrence, KS  
St. Joseph, MO—KS  
Topeka, KS  
Wichita, KS

### What do municipalities that fall under Phase Two MS4 permitting need to do?

They will need to:  
—fill out a minimum 2-page form;  
—provide a map of their corporate limits;  
—outline best management practices (BMPs) they will (or already) undertake to ensure water quality in their

## NPDES Phase Two at a Glance:

Phase Two of the National Pollution Discharge Elimination System has three permit programs related to municipal road departments:

- stormwater system discharge
- industrial runoff
- construction runoff

Each permit requires different paperwork. Consult the *KUTC Newsletter* Spring 2002 and Summer 2000 issues for more information on the industrial and construction runoff programs, or call the Kansas Department of Health and Environment (KDHE), which is the permitting authority for these federal regulations.

*KUTC Newsletters* may be obtained in hard copy by calling Lisa Harris at (785) 864-2590 or PDFs may be downloaded from our web site at [www.kslap.kutc.ku.edu](http://www.kslap.kutc.ku.edu).

drainage system; and  
—identify measurable goals to evaluate the performance of the BMPs.

Ideas for best management practices can be found at the Environmental Protection Agency’s web site at <http://cfpub.epa.gov/npdes/stormwater/suphase2.cfm>. There are six minimum requirements under the permit:

- Public education and outreach;
- Public involvement and participation;
- Illicit discharge detection and elimination;
- construction site stormwater runoff control;
- Post-construction stormwater management in new development and redevelopment;
- Pollution prevention/good house-keeping for municipal operations.

### How much time and money will it cost to apply and comply with Phase Two MS4 permitting?

The permit application process for the first phase of this regulation was very expensive—about \$300,000, per Walker. Extensive mapping and water testing were required, among other things. The Phase One cities in Kansas

hired consultants to do this work.

The good news is: Applying for a Phase Two permit will be much less costly. Walker said the emphasis in Phase Two has shifted from the application process to implementing best management practices for water quality. Walker estimates that it would take an engineer one or two days to com-

## Municipalities should anticipate further costs when implementing their best management practices.

plete the application paperwork and documentation.

In addition to costs for the application process, there is an annual permit fee. The annual fee for the Phase One municipalities is \$2,000 per year, but KDHE anticipates enacting a prorated annual fee schedule for the Phase Two municipalities. The price will range from a low value of \$185 to a high of \$2,000 depending on the municipality’s population.

Municipalities should anticipate further costs when implementing their best management practices. The most expensive and thorny task could be identifying illegal sources of water pollution.

“It will take time and manpower

to find situations that exist out there—like a local radiator shop with a direct line to a ditch, for example,” Walker said.

A consortium of Phase Two MS4 cities has been formed to share some of the costs of applying for and complying with a Phase Two MS4 permit. See article at right.

**When are MS4 permit applications due?**

For MS4s that have been designated as regulated under the NPDES stormwater permit program (and therefore require permit coverage), the municipality needs to submit an application by March 10, 2003, or within 180 days after designation if such designation occurred after September 11, 2002. Note that the application should not be submitted before January 2003.

**Where can I get an MS4 permit application?**

Kansas Department of Health & Environment  
 Attention: Rance Walker  
 Division of Environment  
 Municipal Programs Section  
 1000 SW Jackson St., Suite 420  
 Topeka, Kansas 66612-1367

**After an MS4 permit is issued, what do municipalities need to do?**

Municipalities need to continue (or start) the best management practices they identified in their permit application to ensure water quality in their drainage system, and they need to evaluate the performance of those practices.

**How can I learn more about the MS4 permit program?**

Visit KDHE’s web site at [www.kdhe.state.ks.us/stormwater/#muni](http://www.kdhe.state.ks.us/stormwater/#muni). Or call Rance Walker at 785/296-5537. ■

**APWA’s Kansas Chapter Establishes MS4 Phase Two Consortium**

... by Lisa Harris . . . . .

**A**n idea hatched by the cities of Salina and Manhattan, Kansas, has developed into a state-wide consortium under the umbrella of the American Public Works Association. The consortium is poised to save its members a lot of time and money of complying with Phase Two stormwater permit requirements.

The Kansas Chapter of the APWA has approved forming a consortium of Phase Two cities in Kansas with designated MS4s. The group seeks to help cities meet the requirements of their Phase Two permits. They are considering four main goals:

- serving as a liaison between KDHE and the affected cities;
- preparing a menu of best practices that are particularly applicable in Kansas;
- developing a model ordinance that cities could adopt to address stormwater pollution; and
- writing standard specifications for developers for erosion control at construction sites.

Shawn O’Leary, Salina’s Director of Engineering and General Services, is the Consortium’s coordinator. He

said “The efforts of the Consortium will allow us to pool our resources to comply with permit requirements while creating some consistency across the State for working with the public and developers.”

The Consortium had its first meeting in September 2002, in Salina. Fifteen of the 20 cities with designated MS4s attended, along with Rance Walker from KHDE.

“It was great,” O’Leary said. “The room was packed, and the discussion was very positive.” O’Leary said that many city reps are prepared to ask their commissions for the funding necessary to hire a consultant to do the work for the Consortium.

O’Leary said that each city’s permit will be different, as each city has different streams and conditions affecting those streams. But the Consortium’s work will help cities through some of the basics in applying for a permit, with fine-tuning done by each city.

The Consortium will meet again in October to work out a timeline for requesting funding and identify a consultant to do the work.

For more information, call Shawn O’Leary at (785) 309-5725. ■

**NACE Stormwater and Drainage Guide**

**T**he National Association of County Engineers (NACE) has a *Stormwater Management and Drainage Guide* which replaces two outdated NACE action guides: *Drainage* and *Soil Erosion and Water Pollution Prevention*. This 150-page guide outlines up-to-date information on best practices. Chapters include:

- stormwater management rationale;
- planning for stormwater;
- design of basic drainage elements;
- design of stormwater management

systems and practices; and

- wetlands management.

The price is a bargain, at \$7 for NACE members and \$10 for non-members. To place an order, visit the NACE web site at: [www.naco.org/affils/nace/news/OrderForm.htm](http://www.naco.org/affils/nace/news/OrderForm.htm)

Note: NACE’s web site has a number of reasonably priced action guides, training guides, and videos.

Reprinted from *Florida T2chnology Transfer Quarterly*, February 2002. ■

# Some Things Local Agencies Need to Know about the MUTCD's Millennium Edition

... by Thomas E. Mulinazzi . . . . .

**W**ell, we finally got the Millennium Edition of the *Manual of Uniform Traffic Control Devices* in 2001. There are some good things about this new edition—and some not-so-good things.

First of all, this new edition should not be used in Kansas right now. That's because the Secretary of Transportation has not yet adopted it. KDOT is in the process of reviewing it. More on that later, but for now, keep using the 1988 edition. Get familiar with the new edition, though, because it will likely be adopted at some point, and you'll want to be ready.

Here are some of my observations about the Millennium edition and some changes that affect local agencies:

## **New Part 5**

One of the things I like about this revised edition is the new, separate chapter on traffic control devices for

**T**he Manual of Uniform Traffic Control Devices (MUTCD) is published by the Federal Highway Administration and contains standards, guidelines and options for the installation of all traffic control devices on any street or road in the United States. In each state that adopts the MUTCD as a standard, the MUTCD must be followed by that state's DOT and all local road departments.

low volume roads—Part 5. Previous editions of the MUTCD contained nothing about traffic control on low volume roads. The Manual defines a low volume road as a facility lying outside of built-up areas of cities, towns, and communities with less

## **The Millennium edition of the MUTCD has the following parts:**

- Part 1, General
- Part 2, Signs
- Part 3, Markings
- Part 4, Highway Traffic Signals
- Part 5, Traffic Control Devices for Low Volume Roads
- Part 6, Temporary Traffic Control
- Part 7, Traffic Control for School Areas
- Part 8, Traffic Control for Highway-Rail Grade Crossings
- Part 9, Traffic Control for Bicycle Facilities
- Part 10, Traffic Controls for Highway-Light Rail Transit Grade Crossings

than 400 average annual daily traffic (AADT). A low volume road can be paved or unpaved. In Kansas, most of our low volume roads are unpaved.

## **Some sign distances and heights have changed**

Part 2 contains a couple of diagrams showing the heights and lateral locations of signs for typical installations. The 1988 MUTCD says that signs in rural areas were normally placed 12 ft off the edge of the roadway. However, for rural districts, the new edition of the Manual says “the side of the sign closest to the roadway shall not be less than 6 ft from the edge of the roadway and not less than 5 ft above the edge of the pavement. In cities, the sign closest to the roadway shall be not be less than 2 ft behind the face of the curb and not less than 7 ft above the ground.”

In Chapter 5 for low volume roads, it states that in certain situations, where conditions merit, the sign can be placed as close as 2 ft from the edge of the roadway. That flexibility may really help local agencies in certain situations.

## **The R-word**

Another section that will have more importance to local agencies in the future is Section 2a-09 on minimum retroreflectivity levels. This section says it is “*reserved for future text based on FHWA rule making.*” What this means is that the Federal Highway Administration is not willing at this time to take a stand on the minimum retroreflectivity levels required for each type of sign sheeting and each sign color. This issue is under further study, and, hopefully when it is resolved, the minimum levels of retroreflectivity will not impact standard practice for sign maintenance for small road agencies unless their signs are really in bad condition.

Retroreflectivity has gotten a bad rap, but come on!—*everyone* has to be in favor of retroreflectivity. If you're not, it is like saying you're against your mother, apple pie, and Chevrolet! But I do not want to give the lawyers a high threshold value below which governmental agencies are held liable for the retroreflectivity levels of their signs. [And it looks as if the FHWA doesn't want that either (see page 8).]

## **Temporary work zone changes**

Chapter 6, dealing with temporary traffic control (the old construction or

work zone signing section), has a couple of drastic changes. The height of a sign used in a construction zone increased for a brief period of time from 5 ft to 7 ft. In this edition of the MUTCD, it now calls for a minimum of 5 ft above the ground, which I think is a significant change and will save some expense on length of posts.

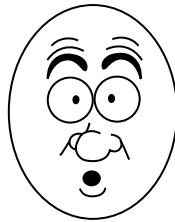
Another interesting change in Chapter 6 discontinues the uneven pavement sign and low shoulder sign, which shows a drop-off and a vehicle with two wheels on the high side and two wheels on the low side. The Manual recommends replacing this sign with a word-message sign that says "low shoulder" or "uneven pavement." The reason for this change is the former sign was confusing for some drivers—they took the image literally and thought it was telling them to drive straddling the drop-off.

### New definitions for engineering judgement and study

Probably the most drastic change in the Manual is in Part 1, the General Section. This section includes a list of definitions, including those for "engineering judgment" and "engineering study." Engineering judgment is defined as:

*"...evaluation of available pertinent information and the application of appropriate principles, standards, guidance, and practices as contained in this Manual and other sources for the purpose of deciding upon the applicability, design, operation or installation of a traffic control device. Engineering judgment shall be exercised by an engineer or by an individual working under the supervision of an engineer through the application of procedures and criteria established by the engineer. Documentation of engineering judgment is not required."*

The definition of an engineering study is *"...a comprehensive analysis and evaluation of available pertinent*



## Seeing Pink?

We recently found this thread on the national MUTCD web site discussion forum:

"I have noticed nearly every state using fluorescent pink construction signs yet the MUTCD has never made any mention of ever using this color on any sign. Who started this and why are they being used if there is no standard for these signs?" —Trent Legg

"Trent, are ya' smokin' crack, or what? Those signs are fluorescent orange. See your optometrist." —unsigned

"Sometimes orange pigments fade to pink in sunlight. One of the proposed changes is assigning pink (technically, 'coral') for incident management signs, such as Accident Ahead, etc." —Jim Mearkle, PE

Whatever color you're seeing out there, you can participate in discussion about the MUTCD by logging onto <http://mutcd.fhwa.dot.gov>. Click on "Discussion Area" under "Communication" in the left-hand column.

*information...*" The rest of the definition is the same as the definition for engineering judgement, except at the end it says: *"an engineering study shall be documented."*

The Millennium edition is the first MUTCD edition in which "engineering judgement" and "engineering study" are defined. The definitions specify the role of an engineer in traffic control decisions. Most of the signs in the *Manual of Uniform Traffic Control Devices* require an engineering study or at least engineering judgment for their installation.

The reason these definitions will have such a big impact in Kansas is we have many cities and counties in the State without an engineer on staff. If this Manual is ever adopted by the Secretary of Transportation, these definitions of engineering study and engineering judgment would result in many problems for our local jurisdictions. I suspect this is one of the reasons why KDOT is taking such an extensive look at the Millennium Edition.

### MUTCD training in Kansas

Together with Dr. Bobb Stokes, from Kansas State University, I will be offering a series of courses around the

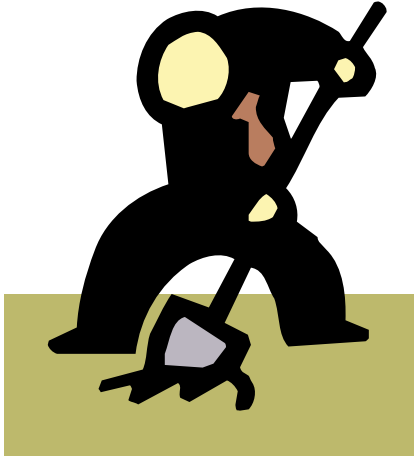
State this coming next year on the MUTCD. I strongly encourage you to attend and/or send your staff to one of these courses. You will learn current standards and guidelines for traffic sign installations on Kansas streets and highways.

Contrary to what you may think, the *Manual of Uniform Traffic Control Devices* must be followed in the State of Kansas. It must be followed on all city streets, country roads, township roads, state highways, and even the interstate system.

When further changes are made to the MUTCD (and I have already received a lengthy addendum to the Millennium edition, plus notice of two additional revisions), we will make the pertinent changes known to you through our *KUTC Newsletter* or fact sheets which we will distribute to local agencies.

If you have any questions about the MUTCD and its application in Kansas, feel free to call me at (785) 864-2928 or send an e-mail message to [tomm@ku.edu](mailto:tomm@ku.edu). ■

# Legislature Digs for Fine Points in One-Call Overhaul



... by Ira J. Allen .....

This year the Kansas legislature voted in favor of a significant overhaul of the Kansas Underground Utility Damage Prevention Act, more commonly known as One-Call. They amended various items, several of which will affect the way you do business, whether you're a utility operator or an excavator. The amendments take effect January 1, 2003.

## Some terms were redefined

First off, a number of terms were either redefined or newly introduced and defined. Following are a few examples.

The term "excavation" previously excluded tilling of the soil in general. Now, some instances of tilling are considered excavation, and only "tilling the soil for normal agriculture purposes" is excluded. In other words, if you're planting corn, don't bother calling. But if somebody is paying you to come till his or her backyard for non-agricultural purposes, call One-Call first.

The term "facility" has been modified to clarify that *"the facilities being excluded from the definition are those which are not located on platted land or*

## What is Kansas One-Call?

Most readers of this newsletter are familiar with the Kansas One-Call system, but for those who are not, here is a brief overview.

The One-Call system is a response to K.S.A. 66.18, the Kansas Underground Utility Damage Prevention Act, which provides for an agency to serve as a telephone-based relay between excavators and operators of underground utility facilities.

Most underground utility owners are legally required to belong to this organization, and the excavators are legally required to call before digging. Exceptions are water, sewer or other utilities shown in K.S.A. 66-1802(e).

The way it works is this: You call One-Call before digging, they notify any and all member utility companies with pipelines, wires and suchlike in the area you're going to be digging in, and these companies (operators) are required to send representatives out to the property to mark out a 24-inch "tolerance zone" around each of their facilities within the area where you need to dig. It helps cut down on utility outages, fatal gas leaks, explosions, electrocution and interrupted cable service, ya dig?

*inside the corporate limits of any city."*<sup>1</sup>

This means that some underground utilities (see 66-1802(e) exemptions) do not fit the definition if they are not on a tract of land that has been subdivided into lots of less than five acres for the purpose of building developments *and* they are not within city limits. This exemption only applies to those listed in 66-1802(e)—not all utility companies.

The term "marking" now specifically allows flags, rather than merely implying their use, as before.

This definition now also states: *"the marking is done with materials to*

*show the field location of underground facilities in accordance with rules and regulations of the KCC"* (Kansas Corporation Commission). Previously marking was to be done *"in accordance with the resolution adopted August 1984 by the Utility Location Coordination Council of the American Public Works Association."* The KCC is working on new rules and regulations for this Act, and these may be expected out sometime in the next year.

These changes may all seem minor at first glance. However, they indicate the care and effort that has been put into fine-tuning this Act. It's worth learning them. Many small changes often add up, and you can find yourself looking at an unfamiliar document if you don't try to keep up with these changes.

## Timing is everything

We asked Max Pendergrass, Public Relations Coordinator for One-Call, to identify the amendments he

<sup>1</sup> One-Call has produced a very helpful PowerPoint presentation breaking down all of the specific amendments to the statute. For more information on this, contact Max Pendergrass at (316) 618-8785. Or download the PowerPoint file from our web site at [www.kslap.kutc.ku.edu](http://www.kslap.kutc.ku.edu).

thinks are most important, or will have the greatest effect on local agencies. They are:

*Definition of working day.* One of the big changes to Kansas One-Call is a more precise definition of the “working day”—see box at right. Under the new definition, a working day begins at 12:01 a.m. That means that the day you call or fax notice to dig cannot be a full working day (unless you happen to call exactly one minute after midnight). So if you call at noon on a Tuesday, you will not be able to legally begin digging until Friday, because all of Wednesday and all of Thursday will be considered your two working days. Ultimately it’s not that big a deal, but excavators will need to remember to call in a little sooner than before.

*Holidays pared down.* Another important change to One-Call also has to do with which days are considered work days. Because Columbus Day, Martin Luther King Day, and any other holidays not on the new list will be counted as working days, some operators could find themselves scrambling around these holidays to stay within the time limits for locating their lines.

*Changes to excavation start date.* Formerly, excavators were required to notify One-Call “at least two full working days, but not more than 10 working days before commencing the excavation activity.” Now the Statute now reads, “Except in the case of an emergency, an excavator will be required to serve notice of intent of excavation at least two full working days, but not more than 15 calendar days before the scheduled excavation start date.” So where before you had up to 10 working days between your call-in and your start date for excavation, you now have up to 15 calendar days, which includes weekends and holidays. Depending on when you plan to work, that could

## Changes to Definition of “Working Day”

### *Before:*

- all days except weekends, federal, state or local holidays
- no references to time of day; assumed normal workday hours

### *New:*

- working day begins at 12:01 in the morning;
- all days except weekends, New Year’s Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the day after Thanksgiving, and Christmas Day (no other holidays accepted)

give you an extra day or so, or a day or two fewer. This will certainly be an amendment to keep in mind when planning your excavation.

### **Causes for grumbling?**

Pendergrass said, “There are some things the utilities may not like, and some things the contractors may not like” about the revised statute. One item utilities might take issue with is the new requirement that they notify the excavator even when they don’t have facilities in the proposed excavation site. This was not required before, and was often not done.

This may seem like an added, unnecessary piece of work for an already-busy utility manager, but this amendment clears the way for contractors to begin digging, instead of worrying about whether the operator actually has no facilities there or is simply running late in locating those facilities. Ultimately, this amendment, as do most of the others we are discussing, aims to streamline the locate/dig process and to attempt to give everybody a fair shake.

One change that creates a new step for contractors is the introduction of “whitelining,” whereby utility operators are authorized to request that excavators mark “the route or boundary of the proposed excavation site with white paint, white stakes, or white flags.” This will allow utilities to cover a smaller area when attempting to locate their facilities, which could in turn lead to decreased locate response

times. However, this amendment can also put more time between the initial call and when an excavator can actually begin digging, as the utility company has another full working day to locate its facilities after the area has been whitelined.

There may be some delays as operators and excavators grow accustomed to this amendment, but it is possible that whitelining will become standard procedure for excavators (although not legally required without a utility operator request). The bottom line here is that this practice can help prevent damages to underground facilities, and hence to everybody’s pocketbooks, just like all the other pieces of this statute.

### **Notice by fax is OK**

Another change is to how contact may be made with One-Call. Previously, Kansas law required that excavators call an 800 number to reach One-Call. One aim of the amendments, according to Pendergrass, is to “make the document more reflective of reality.” Hence, other methods of contacting One-Call will now be allowed, such as e-mail, internet and fax. This is good, because people have been sending faxes to that agency for years. Technically, these nefarious fax-users are criminals, but as of January 1, 2003, they will be free to walk in society with their heads held high. But seriously... by working to make legal documents reflect reality, One-Call and the Kansas Legislature

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# Shedding Light on Retroreflectivity Concerns

*An interview with Safety Engineer Greg Schertz, FHWA, Lakewood, CO*

... by Ira Allen .....

**R**etroreflectivity. It's a big word. And it's been an important and controversial word since the early 1990s, when the Federal Highway Administration (FHWA) began working to develop minimum levels of retroreflectivity for traffic signs and pavement markings. Various people have expressed their concerns about federal retroreflectivity guidelines. I asked Greg Schertz, Safety Engineer for FHWA, a few questions about this issue. The following responses might help to illuminate some keys areas.

***What is the difference between reflectivity and retroreflectivity?***

Light bounces, or reflects, off almost every surface. Retroreflectivity is one type of reflectivity. Retroreflectivity is the property of a material that returns light to the source. In the case of roadways at night, retroreflective materials may be traffic signs and pavement markings and the source is usually the headlights of a vehicle. Because a driver's eyes are close to a vehicle's headlights, some of the light returned from retroreflective materials reaches the driver's eyes. The amount of light from an object reaching the driver's eyes will have a great impact on how bright that object appears to the driver. Therefore, retroreflective materials that are efficient in returning light to a driver's eyes may appear brighter to the driver than those that are not.

***What are some of the issues currently being discussed about sign retroreflectivity?***

Unfortunately, the retroreflective characteristics of traffic control

devices gradually deteriorate over time. As a result, it is important to replace traffic control devices prior to the time when they no longer meet the needs of the nighttime driver. The major question is not whether the devices should be replaced, but when?

***How do we know when the device no longer meets the needs of the driver?***

From what we have heard, it is the implementation of sign evaluation methods that seems to be the biggest

“We can't see the need to measure the retroreflectivity of every sign in the field.”

issue, and not the suggested values of retroreflectivity. With that in mind, FHWA is in the process of developing guidance for evaluating the nighttime visibility of signs. We can't see the need to measure the retroreflectivity of every sign in the field. That would be too big of a burden on jurisdictions. And it wouldn't necessarily tell us if the sign is actually visible at night. If a tree branch is in front of the sign, it doesn't matter how retroreflective the sign is.

***Can you discuss the fears some have expressed regarding potential liability issues arising from Federal minimum guidelines, particularly in light of the high degree of variability in retroreflectometer results?***

Several people have expressed their thoughts about this. And they all seem to recommend the same thing: Don't put any retroreflectivity values in the MUTCD. We are taking that into serious consideration and are

contemplating putting the researched values in a separate document that would be available to practitioners but would not be included in the MUTCD as a standard. We are also asking the opinions of several state DOT attorneys on how best to handle this issue.

***Aren't rural municipalities likely to be at a serious disadvantage in implementing retroreflectivity guidelines? Has this been considered at the Federal level, and if so, what is the response?***

I'm not sure I can agree that rural municipalities are likely to be at a serious disadvantage. Many rural municipalities currently have excellent sign maintenance practices, even without any additional guidelines from the FHWA. Some of them can

be considered model municipalities for sign management.

However, to answer your question, local municipalities are definitely being considered. We just completed four national sign visibility workshops to present the latest in retroreflectivity research and to ask what the participants think FHWA should be doing about this subject and the development of guidelines. FHWA paid the travel costs to have state and local representatives attend the workshops.

The local public agency participants (including LTAP representatives) shared a lot of information and provided some good suggestions to us. For example, they told us not to mandate measurement of their signs, but to provide guidance on simple, practical methods to provide reasonable nighttime visibility. The workshop participants actually developed their suggested MUTCD language, which will be used as the basis for developing

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# KDOT Korner

## KDOT's 10-mile rule requires local agencies to share the load



... by Lisa Harris .....

**K**DOT rules! —at least when it comes to deciding where heavy and oversized loads travel on state roads. Trouble is, because KDOT doesn't want large structure loads<sup>1</sup> on state roads for very long, they require truck operators to frequently get off the state system onto local roads.

KDOT has good reasons for this policy. State roads across the State often carry the highest traffic loads at the highest speeds, including truck traffic. That spells higher risk for accidents and congestion when a large or heavy load shares the road.

However, local roads are no better designed to handle these loads. While some local roads have lower traffic counts, making them safer for hauling heavy or oversize loads, these roads are often built for low volumes and can be damaged by these vehicles. Local road departments also have the same concerns as the state about damage to signs, bridges and overpasses caused by unwieldy loads.

We are featuring a 2-part series on

this issue. This article will describe KDOT's large structure permit policy commonly called the 10-mile rule. Our next issue will profile several local governments in Kansas that have established their own permit programs to minimize the damage from heavy and large loads.

### The "rule"

The 10-mile rule is really a rule of thumb, says Ken Gudenkauf, KDOT's Assistant Bureau Chief for Traffic Engineering. It is named after a former State regulation to limit large loads on state highways to about 10 miles at a time before moving onto local roads. In the mid-1990s KDOT updated the regulations to a policy which states: *"When alternate routes are available, movers of large structures shall reduce the use of state highways to a minimum."*

K.S.A. 8-1911 contains State law for moving overweight and oversized loads through the State. Because the current "10-mile rule" is KDOT policy and not a regulation, it is not in this statute.

Gudenkauf describes the importance of this policy this way: "When you mix truck routes, high traffic, high speeds and a large load, you have a dangerous situation, especially if that large load breaks down and vehicles try to pass it. We like to keep these loads on low volume roads as much as possible, for safety reasons."

### KDOT's permit process

KDOT's administrative regulations and permit process underwent an overhaul several years ago, making them more understandable and easier to

enforce. Owners of vehicles carrying oversize or overweight loads must obtain a single trip or annual permit from the Special Permit Section of KDOT's Bureau of Traffic Engineering. The permit application specifies the proposed route the vehicle will travel. When the route includes local roads, KDOT encourages the hauler to contact the local jurisdictions along the route, but does not require it.

Large structure permits require a approval by a KDOT representative within each district the load travels through. Each rep must sign off on the permit worksheet. Many large structure permits have multiple such signatures.

District reps help determine a suitable route and alert the mover of any potential problems along the way.

"Our engineers out there know what roads will best accommodate these loads," said Gudenkauf.

In addition, sub-area staff within each district help make sure everything goes well. For example they check to see that signs are replaced after the load is moved.

Large structure loads must be accompanied by both front and rear escort vehicles, either by a company-provided escort or one they hire.

The State Highway Patrol keeps an eye on large and heavy loads as well. Haulers are required to carry the permit in their truck.

When KDOT has particular concerns about oversize or overweight loads, they initiate a meeting with the movers or manufacturers. For example, metal buckets manufactured near Olathe for strip mines in the western United States are now manufactured in halves and are welded together after getting to their destinations. This change was made because the completed buckets were too large to move safely.

*continued on page 10* ➤

<sup>1</sup>Large structure permitted loads are greater than 16'-6" wide or 18' high.

## Retroreflectivity, *continued from page 8*

the language in our rulemaking. Their language focused a lot on process.

### In response:

*I am happy to read that FHWA requested input from local public agency participants, including representatives from LTAP centers. It appears that the idea of mandated measurements for sign retroreflectivity is now being discounted. I couldn't agree more. I am for retroreflectivity; you have to be able to see traffic signs at night. That is a no-brainer. Why not make it mandatory that each agency drive their road system once a year during night-time hours and record a qualitative evaluation of sign retroreflectivity? As painful as this may be, it is much better than setting mandated measurements for retroreflectivity.*

—Tom Mulinazzi, Director, Kansas LTAP

They believed a maintenance/management process is a key element to making sure we have good signs.

### **Where do we stand at the moment in terms of defining retroreflectivity guidelines?**

FHWA plans to take the recommendations from the workshops, plus those received from others individually, and begin drafting proposed MUTCD language and the appropriate supplemental information. This information will be coordinated with the AASHTO Standing Committee on Highway's Retroreflectivity Task Force. That Task Force has been providing recommendations to FHWA in the past and we will continue to solicit their input. By the way, NACE [the National Association of County Engineers] is represented on that task force and has been very involved thus far.

After coordinating with the Task Force and developing the proposed rulemaking, we will deliver the documents to FHWA legal personnel. It

will go through their review and eventually will be published in the *Federal Register* for comments by anyone interested. After those comments are considered and necessary revisions are made, FHWA plans to publish a Final Rule in the *Federal Register*.

### **Are there any other issues you feel are important to discuss here?**

We have many municipalities that are doing a great job of providing good nighttime sign visibility for the drivers on their roads and are following the current guidance in the MUTCD. For the municipalities in that situation, we hope to develop retroreflectivity guidance that does not impose additional burdens, such as funding or liability.

But for those other municipalities, I highly recommend they take a close look at the current [Millennium edition] MUTCD, which establishes procedures related to retroreflectivity. The MUTCD currently requires signs to show the same shape and color by both day and night (Sect. 2A.08), and recommends day and night inspections to assure adequate maintenance (Sect. 2A.23).

The traffic engineers (including those at the local level) who drafted the current MUTCD language use signs to communicate information. If signs are the method of communication to drivers, we all want to make sure those same signs are visible at night. With input from public officials at the state and local level, I believe we can work together to develop a sign retroreflectivity guideline that meets the needs of municipalities, FHWA, and the driving public.

—Greg Shertz, FHWA ■

## One-Call Overhaul, *continued from page 7*

seek to establish more respect for the law and encourage accuracy in government. These amendments aim to do just that. ■

## KDOT's 10-mile rule, *continued from page 9*

### **What's a local agency to do?**

Some local agencies have been unhappy with KDOT's large structure policy. When the mover finds a route that works, they tend to stick with it, so that means the same roads see this kind of traffic again and again.

K.S.A. 8-1911 allows local governments to establish permit programs for local roads. In our next issue we will talk with several highway departments who have done just that, and are glad they did.

Information about transporting heavy/oversized loads is available in *Trucking Through Kansas...2002*, a booklet jointly published by the Kansas Departments of Revenue and Transportation. The booklet contains a reprint of K.S.A. 8-1911, administrative definitions, vehicle and load size and weight specifications, a question-and-answer section, and more. It's the book to have about hauling loads through Kansas, and it's a good tool for local governments that want to develop their own permit programs. To receive a copy of *Trucking Through Kansas...2002*, turn to page 15.

If you have any questions about the state's 10-mile rule, call your KDOT district office or Steve Zimmerman at KDOT's Special Permit Section at (785) 296-3618. The web site [www.truckingks.org](http://www.truckingks.org) also has a wealth of information on transporting large and heavy loads. ■

## A Leg Up

# MUTCD's Revision 2 Addresses Bicyclist and Pedestrian Safety at Work Zones

... by Pat Weaver and Ira Allen ...

Does it seem surprising that 16 percent of people who died in work zone crashes in 2002 were pedestrians and bicyclists?<sup>1</sup> Even though this represents a significant number of non-motorists, it's common to see a construction work zone without signing or other accommodation for pedestrians and cyclists.

Denver Bicycle Planner James Mackay notes, "There is a sad history of temporary traffic control devices routinely being placed on sidewalks [precluding] pedestrian movements—especially for pedestrians with disabilities. Sidewalks on viaducts are a chronic example of temporary traffic control signing placement at the expense of bicycle and pedestrian movements."



While perhaps unintentional, inadequate work zone design for all modes of travel is likely to increase the chance of collision in these areas. The proposed revisions (Revision 2) to the Millennium edition of the *Manual on Uniform Traffic Control Devices (MUTCD)* have incorpo-

Revision 2 that address accommodation of cyclists and pedestrians in construction and maintenance operations (see page 13).

### A word about ADA

Many of these changes in the MUTCD for temporary facilities,

The language has been changed to identify and include all modes likely to travel through or around work zones.

rated significant new guidance to help those who set up temporary traffic controls in work zones keep in mind the needs of pedestrians or cyclists in the area.

### New guidance for temporary traffic control

Revision 2 of the MUTCD Part VI, Temporary Traffic Control, identifies the need to provide "...for continuity of the movement of motor vehicle, bicycle and pedestrian traffic (including accessible passage)." It states that the "primary function of temporary traffic control is to provide for the safe and efficient movement of road users (drivers, bicyclists, and pedestrians)." The language has been changed to specifically identify and include all modes likely to travel through or around work zones.

Mackay has provided a comprehensive list of the provisions in

including safe pedestrian routes around work sites, are supported in law by the accessibility requirements of the Americans with Disabilities Act (ADA) of 1990. The ADA has established design criteria for accessibility features of pedestrian facilities. Specific requirements of both the ADA and the Architectural Barriers Act are provided in guidelines developed by the U.S. Access Board within the ADA Accessibility Guidelines (ADAAG).

### Proposed guidelines on accessible public rights-of-way also address work zones

On June 17 of this year, the U.S. Access Board released for public comment its draft guidelines on accessible public rights-of-way. Local jurisdictions and others covered by these laws must ensure that the facilities they build or alter are accessible to people with disabilities. The draft guidelines

*continued on page 12* ►

<sup>1</sup>According to the Federal Motor Carrier Safety Administration in their *2000 Work Zone Traffic Crash Facts*, in the period from 1996 to 2000, 652 fatal work zone crashes involved non-motorists. Two percent of people (about 8,000) reported injured in work zone crashes were non-motorists—either pedestrians or bicyclists. And, in the latest data released from National Highway Transportation Safety Administration, the number of work zone fatalities increased even more in 2001 with 1,079 people killed in 2001 (a 5 percent increase from 2000), including 152 deaths of pedestrians or cyclists.

## New work zone guidelines, *continued from page 11*

are a supplement to the ADAAG guidelines and will eventually comprise a new chapter on public rights-of-way.

These new public rights-of-way provisions are intended to ensure that access for persons with disabilities is provided wherever a pedestrian way is newly built or altered. The draft guidelines address construction within public rights-of-way and call for an alternate circulation path where pedestrian access routes are blocked by construction, alteration, maintenance, or other temporary conditions. The requirements are based on proposed standards in Chapter 6 of the MUTCD. For more information about the complete proposed requirements, a copy is available online at [www.access-board.gov/rowdraft.htm](http://www.access-board.gov/rowdraft.htm). The deadline for public comments is October 28, 2002.

### So let's get to work

The new provisions of the MUTCD and *Public Rights-of-Way Guidelines* are still in draft form. But, they're coming, and it's time to get to work. Check the MUTCD before beginning a construction or reconstruction project. Read the *Public Rights-of-Way Guidelines* when they are finalized to ensure that you are in compliance with federal law.

What else can you do now? Here are some basic work zone safety tips, based on advice from Maria Hagen, technology transfer engineer at the FHWA Minnesota Division Office:

- Don't assume that pedestrians and cyclists will see or recognize the workers or hazards in a work area.
- Install traffic control devices to warn pedestrians and bicyclists that

there is a changed condition ahead and communicate how to safely travel through the work zone.

- Use many methods to tell the public about projects taking place in their



*A pile of dirt blocks this sidewalk just before an intersection, forcing pedestrians onto a busy street with no shoulders.*

neighborhood—newsletters, web sites, local newspapers, direct mailings to affected area, etc.

- Install traffic control devices closer together than usual in areas of high pedestrian or cyclist usage. The same type of traffic control that keeps a motorist out of an area may not be as obvious to a pedestrian or a cyclist.
- Evaluate the effectiveness of a traffic control plan, after it's installed, by driving through the area. Even better, walk or cycle through the area. Check on visibility of the work zone, especially at curves or dips in a road.

### Examples from other cities

In addition to these basic guidelines, some cities have already adopted language protecting pedestrians and cyclists in their traffic control plans. Denver, Colorado and Sunnyvale, California are two good examples of cities with guidelines to protect the

safety of all modes and reduce inconvenience associated with work zones.

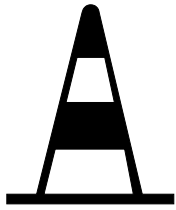
Sunnyvale outlines three essential principles for temporary traffic control for pedestrian safety:

- 1) Pedestrians should not be led into conflict with work site vehicles, equipment and operations;
- 2) Pedestrians should not be led into conflict with vehicles moving through or around the work site; and
- 3) Pedestrians should be provided with a safe and convenient path that replicates as nearly as practical the desirable characteristics of the existing sidewalk(s) or foot-path(s).

While these three provisions were initially written with pedestrians in mind, each can be easily rewritten to include bicyclists.

Denver has created a thorough and detailed plan for ensuring the safety of users of bikeways and multi-use trails. This plan has four parts, the first of which establishes the importance of trail user safety and mandates regular maintenance of trails or advance warning of approved detour plans. The second part sets out guidelines for the operation of motor vehicles on and around bikeways or multi-user trails during construction, and section three addresses operations that will affect trails for less than one day. Section four deals with construction that will affect a trail for more than one day and with scenarios where a complete shutdown of a trail will be required.

Although these guidelines were not written specifically for sidewalk areas, they nonetheless contain information that can be helpful to anyone concerned with bicyclist or pedestrian safety in and around work zones.



## Proposed Revisions to MUTCD Part Six Accommodating Bicyclists and Pedestrians

- The support statements in Section 6A.01 identify the need to provide “...for continuity of the movement of motor vehicle, bicycle, and pedestrian traffic (including accessible passage)...” and that “The primary function of temporary traffic control is to provide for the safe and efficient movement of road users (drivers, bicyclists, and pedestrians)...”

- The support statements in Section 6A.01 also identify that “Temporary facilities, including safe pedestrian routes around work sites, are also covered by the accessibility requirements of the Americans with Disabilities Act of 1990 (ADA) (Public Law 101-366, 104 Stat. 327, July 26, 1990. 42 USC 12101-12213, as amended.)”

- Section 6B.01 defines that “The control of road users (drivers, bicyclists, and pedestrians) through a temporary traffic control zone shall be an essential part of highway construction, utility work, maintenance operations, and the management of traffic incidents.”

- The first guidance statement in Section 6B.01 identifies that “The needs of pedestrians who have disabilities should be considered in accordance with the Americans with Disabilities Act of 1990 (ADA), Title II, paragraph 35.130” as well as “...maintenance and utility work should be planned and conducted with the safety of drivers, bicyclists, pedestrians (including those with disabilities), and workers considered at all times.”

- The second guidance statement in Section 6B.01 identifies that “Bicyclists and pedestrians, including those with disabilities, should be provided with access and reasonably safe passage through the temporary traffic control zones.” and that “The needs of all road users (drivers, bicyclists, and pedestrians) should be assessed such that appropriate advance notice is given and clearly defined alternative paths provided.”

- The support statement in Section 6C.01 identifies that “A temporary traffic control plan describes temporary traffic control measures to be used for facilitating road users (drivers, bicyclists, and pedestrians, which includes people with disabilities) through a work zone or an incident area.”

- Section 6F.03 defines that “In business, commercial, and residential districts where parking and/or bicycle or pedestrian movement is likely to occur....the distance between the bottom of the sign and the top of the near edge of the traveled way shall be at least 2.1m (7ft).”

- Section 6F.12 defines that “If a temporary crosswalk is established, it shall be accessible to pedestrians with disabilities”

- Section 6F.50 defines the Pedestrian/Bicycle Detour (M4-9a) sign as well as the Pedestrian Detour (M4-9b) and Bicycle Detour (M4-9c) signs. These signs are also shown in Figure 6F-12.

- Section 6F.55 defines that “Devices used to channelize pedestrians shall be detectable to users of long canes. The pedestrian passage shall be accessible per the Americans with Disabilities Act of 1990 (ADA), Title II, paragraph 35.151.”

For more information: Contact James Mackay, P.E., Denver Bicycle Planner, phone: (720) 865-BIKE, email address: James.Mackay@ci.denver.co.us.

### Conclusion

The writing is on the wall...and in the books and here, in front of you!

Pedestrian and bicyclist safety is a pressing issue, and now is the time to begin planning and implementing guidelines to ensure that safety. Who knows? Tomorrow could be too late.

### Sources

*Improving Construction Zone Safety for City of Lawrence Bicyclists/Pedestrians,*

November 2001, Kansas University Transportation Center, by Pat Weaver and Matthew Kaufman.

*Construction Detour Standards for Bikeways and Multi-Use Trails,* August 1996, City and County of Denver Department of Public Works.

June 2001 Meeting Notes, Sunnyvale, CA, Bicycle and Pedestrian Advisory Committee.

“Work Zone Safety Tips,” Spring/Summer 2000 *Technology*

*Exchange Newsletter,* by Maria Hagen.

“Board Releases Draft Guidelines on Accessible Public Rights-of-Way,” May/June 2002 *Access Currents,* Volume 8 No. 3.

*Manual of Uniform Traffic Control Devices (MUTCD),* Millennium Edition, Chapter 6C, Temporary Traffic Control Elements. ■

## Reviews

### Crack Seal Application (part of FHWA's Pavement Preservation Checklist Series)

USDOT/FHWA, November, 2001. This small, laminated booklet (12 pages) provides a checklist for the crack seal application process. It is intended for state and local highway maintenance and inspection staff. The goal of the publication is to guide the reader through all stages of the process, from pre-application inspection through final clean-up, so nothing important "falls through the cracks." It also discusses common problems (and solutions) that occur with sealant application. —by Geneva Jacobs

### Wildlife Habitat Connectivity Across European Highways

USDOT/FHWA, August 2002. This 60-page report documents a scanning tour of Europe by a delegation of federal, state transportation officials and conservation groups from the

United States. They visited Slovenia, Switzerland, Germany, France, and the Netherlands to learn what actions these countries are taking to preserve wildlife corridors in transportation systems. The report discusses recommendations for U.S. applications in the areas of policy, communication, guidance manuals, and research.

—by Lisa Harris

### Safe Not Sorry Cards

KDOT Bureau of Traffic Safety, 2001. This collection of 12 laminated cards provides advice on driving hazards for various topics, including two-lane roads, bicycles, drunk drivers, bad weather, and more. Suitable for safety awareness programs for the general public. —by Lisa Harris

### Smoothing and Reshaping the Traveled Way

(17:30 minutes) U.S. Forest Service Technology and Development

Program, March 2002. This video provides a step-by-step process for smoothing a reshaping an unpaved road. Topics include crowned roads, insloped and outloped roads, and transition sections.—by Lisa Harris

### Maintaining the Ditch and Surface Cross Drains

(16 minutes) U.S. Forest Service Technology and Development Program, March 2002. This video provides comprehensive instructions for correctly constructing and maintaining ditches, culverts and various surface cross drains. Topics include heeling the ditch, pulling the ditch, rolling drain dips, interceptor dips, earthen water bars and open-top drainage devices. —by Lisa Harris ■

## Calendar

... 2002 .....

\*October 15  
APWA Kansas Chapter  
Fall Meeting  
Wichita, KS

October 15-16  
"MINK2"  
(FHWA County  
Engineers Meeting)  
in St. Joseph, MO  
Call Gary Rosewicz at  
785/562-5349

\*October 24  
Roundtable Discussion,  
APWA Kansas Chapter  
Lawrence, KS

\*\*October 29  
Use of Chemicals and  
Abrasives for Winter  
Road Maintenance  
(Click, Listen and Learn)

October 29-31  
5th Annual National  
Tribal Road Conference  
Albuquerque, NM  
Fax: 970/491-3502

November 18  
Kansas County Highway  
Association Fall Meeting  
(part of KAC meeting)  
in Wichita, KS  
Call Norman Bowers at  
913/782-2640

\*November 21  
Roundtable Discussion,  
APWA Kansas Chapter  
Fort Scott, KS

\*\*December 5  
Risk Management and  
Tort Liability on the  
Roadways  
(Click, Listen & Learn)

January 12-16  
Annual Transportation  
Research Board (TRB)  
Meeting  
in Washington, DC  
Information can be  
found at [www4.trb.org/  
trb/annual.nsf](http://www4.trb.org/trb/annual.nsf)

January 14  
Annual Asphalt  
Technology Transfer  
Seminar  
in Salina, KS  
Call Doug Dagg at  
316/268-4065

For information on calendar items indicated with a \* or to suggest a topic for a future LTAP workshop, contact:

Rose Lichtenberg  
LTAP Training Coordinator  
Kansas University Transportation Center  
1530 W. 15th Street, Room 2011  
Lawrence, KS 66045-7609  
785/864-2594

or visit our Web site at [www.kutc.ku.edu](http://www.kutc.ku.edu)

\*\*To register for the APWA/LTAP "Click Listen and Learn" workshops, call Ashley Gann at (816) 472-6100 ext. 3511. Cost is \$125 per site.

\*For information on APWA Kansas Chapter events, call Brenda Herrman at 785/628-7350.

# Free Resources

Check off your selections, fill in the bottom portion, and return this form to:

KUTC Materials Request, 1530 W. 15th St., Room 2011, Lawrence, Kansas 66045  
or fax to 785/864-3199

## Videos .....

One video per lending request. Two week lending period.

- Smoothing and Reshaping the Traveled Way**  
by U.S. Forest Service, March 2002.
- Maintaining the Ditch and Surface Cross Drains**  
by U.S. Forest Service, March 2002.

## Publications .....

You are free to keep these unless otherwise noted.

- Crack Seal Application (part of FHWA's Pavement Preservation Checklist Series)**  
12 -page laminated booklet. See description on page 14.  
Published by USDOT/FHWA, November 2001.
- Wildlife Habitat Connectivity Across European Highways**  
60 page report documenting a tour of U.S. officials of European roadways that provide wildlife connectivity, and recommendations for U.S. applications. More information on page 14. Published by USDOT/FHWA, August 2002.
- Safe Not Sorry Cards**  
(set of 12 laminated cards) See description on page 14.  
Published by KDOT, 2001.
- Trucking Through Kansas...2002**  
This booklet consolidates the regulatory requirements for the trucking industry in Kansas. Published by KDOT, 2002.

## Equipment .....

Available free—for loan to local highway agencies. Call us at (785) 864-5658 to arrange time period needed for loan. There could be a waiting list for these items.

- Jamar Technologies, Inc. (DB-400) Turning Movement Counter Board**  
A basic model for recording turning movements at intersections. The board is is lightweight and comes with its own case.
- Jamar Technologies, Inc. (TDC-8) Turning Movement Counter Board**  
Can be used to do turning movement counts, classification counts, gap studies, stop-delay studies, speed studies, and travel time studies. The board is is lightweight and comes with its own case.

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