

Highway Worker Safety: Education and Outreach

Requested by

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The Caltrans Division of Research and Innovation (DRI) receives and evaluates numerous research problem statements for funding every year. DRI conducts Preliminary Investigations on these problem statements to better scope and prioritize the proposed research in light of existing credible work on the topics nationally and internationally. Online and print sources for Preliminary Investigations include the National Cooperative Highway Research Program (NCHRP) and other Transportation Research Board (TRB) programs, the American Association of State Highway and Transportation Officials (AASHTO), the research and practices of other transportation agencies, and related academic and industry research. The views and conclusions in cited works, while generally peer reviewed or published by authoritative sources, may not be accepted without qualification by all experts in the field.

Executive Summary

Background

In an ongoing effort to improve safety, Caltrans is investigating innovative practices and technologies to protect construction and maintenance workers on California's highways. The recently formed Safety Innovation Working Group will provide leadership and commitment to improving roadway safety across California through proven and ready-to-be-deployed innovations and technology, with a focus on three areas:

- Education and outreach (internal and external).
- Policy and legal options.
- Equipment such as warning devices and barriers to keep workers safe on the roadway.

This investigation focuses on the education and outreach efforts undertaken at the national, state and regional levels to deliver an effective safety message to the traveling public, agency staff and contractor and agency workers on construction and maintenance job sites.

Summary of Findings

To gather information on the topic of work zone safety education and outreach, we examined web-based information about state department of transportation (DOT) work zone safety programs and compiled relevant research citations and other resources. We present our findings in four topic areas, summarized below:

National Guidance

- FHWA provides an abundance of information on best practices and public information and outreach strategies.
 - The online format of a 2007 guidebook of best practices makes it easy to search by topic area. Each best practice includes a description, the reason for use of the practice, its benefits, the most applicable location and type of project where the practice is most effective, the state using the practice, and contact information.

- A 2005 publication provides guidance to states complying with the federal Work Zone Safety and Mobility Rule.
- A series of fact sheets provide real-world examples of outreach-related projects and practices.
- A 2005 NCHRP guide is the work zone-related installment of *NCHRP Report 500*, a series of publications designed to aid transportation agencies in implementing a Strategic Highway Safety Plan. In addition to providing a high-level review of the types of communication needed to deliver an effective work zone safety message, the report highlights a number of state DOT public outreach programs.

State Education and Outreach Practices

Committees, Working Groups and Task Forces

- The targeted efforts of committees or task groups in seven states—Illinois, Iowa, Louisiana, Minnesota, Texas, Vermont and Washington—bring work zone safety to the forefront by encouraging legislative changes, establishing agencywide direction and monitoring implementation of recommendations.

Work Zone Safety Awareness Campaigns

- Since 2000, the annual National Work Zone Awareness Week, observed in April at the start of the construction season, has encouraged safe driving through highway construction sites. The national program has spawned state-sponsored awareness events across the country.
- The National Work Zone Safety Clearinghouse, a web-based collaboration of FHWA, the American Road & Transportation Builders Association, and the Texas Transportation Institute, offers a database of awareness campaigns. Each entry provides a brief description of a campaign and links to key program materials.
- Detailed information about awareness campaigns in 30 states is available through the National Work Zone Safety Clearinghouse. We spotlight programs and publications from selected states, including:
 - Illinois DOT's annual work zone safety calendar contest.
 - *A Vested Interest in Safety*, the campaign recently launched by Louisiana Department of Transportation and Development, and Louisiana's *TIMED 2 Drive Safe* program, launched in connection with the 2007 National Work Zone Awareness Week.
 - Maryland State Highway Administration's *Road Ready* construction brochure. This document lists each major construction project and provides information on nearby scenic byways to provide motorists with alternate routes.
 - Utah DOT's *Know Where Know Why* campaign includes an interactive web site and construction updates by email, Twitter and local TV news.

Work Zone Safety and Mobility Programs and Policies

- We highlight program documents from five states—Arizona, Idaho, Michigan, Oregon and Texas—that provide examples of public participation efforts and strategies to meet the requirements of the federal Work Zone Safety and Mobility Rule.
- A 2011 report from Oregon DOT examines the efficacy of the agency's work zone safety public education program. Among the report's conclusions is the observation that formal evaluations of the effectiveness of public awareness campaigns are lacking.

Work Zone Safety Training

State DOT Training Programs and Resources

- Among the selected training programs and resources we highlight are a video training series produced by Iowa DOT and the training requirements specified by DOTs in Colorado, Indiana, Kentucky, Missouri, North Carolina and Virginia.

Field Guides and Manuals

- We found a number of agencies that provide pocket guides and field manuals to workers in the field to provide a ready reference for work zone-related activities. In most cases, these guides excerpt provisions of the Manual on Uniform Traffic Control Devices and agency policy. We provide examples from California, Kentucky, Minnesota, Missouri, North Carolina, Ohio, Pennsylvania, Virginia and Wisconsin.

National and Regional Resources

- The web-based National Work Zone Safety Information Clearinghouse provides a searchable database of training courses and programs offered across the country.
- An FHWA compendium of work zone training and guides includes program details and contact information for training in 10 work zone-related categories, including design, inspection, short duration work zones and general worker safety.
- FHWA's Work Zone Safety Grant program has led to the development of more than 50 training products, including guides, training modules and software programs.
- The National Highway Institute provides free web-based courses and cost-based classroom training that cover a range of work zone safety topics and differing levels of expertise.

Research in Progress

- Projects in progress are evaluating the effectiveness of a public information campaign in Ohio and bringing together participants from Kansas, North Carolina, North Dakota and Texas to develop work zone safety education and training programs.

National Guidance

FHWA has published a number of documents to aid state agencies in developing work zone safety outreach programs. Below we highlight documents that offer best practices, key steps in structuring a public information campaign, and real-world examples of effective campaigns. We also include an NCHRP report that proposes outreach efforts to engage motorists, workers and agency personnel.

Work Zone Operations Best Practices Guidebook, FHWA, Publication No. FHWA-HOP-07-131, October 2007.

<http://www.ops.fhwa.dot.gov/wz/practices/best/documents/bpguidebook.pdf>

See page 70 of the PDF for the section on Public Relations, Education and Outreach (General Public, Driver and Elected Officials). Each best practice includes a description, reason(s) the agency used the best practice, primary benefits realized, the most applicable location and type of project where the practice is most effective, the state using the practice, and contact information.

The guidebook, indexed by topic, is also available in a searchable online format at <http://ops.fhwa.dot.gov/wz/practices/best/bestpractices.htm>. Find all practices related to Public Relations, Education and Outreach (General Public, Driver and Elected Officials) here:

<http://ops.fhwa.dot.gov/wz/practices/best/crossref.asp?ID=3>. Specific topic areas of interest include:

- Driver education and training (<http://ops.fhwa.dot.gov/wz/practices/best/topindex.asp?ID=93>).
- Public outreach and information campaigns (<http://ops.fhwa.dot.gov/wz/practices/best/topindex.asp?ID=94>).
- Staff/contractor education and training (<http://ops.fhwa.dot.gov/wz/practices/best/topindex.asp?ID=95>).
- Public relations and media campaigns (<http://ops.fhwa.dot.gov/wz/practices/best/topindex.asp?ID=87>).
- Traveler and traffic information (<http://ops.fhwa.dot.gov/wz/practices/best/crossref.asp?ID=9>).

Work Zone Public Information and Outreach Strategies, FHWA, Report No. FHWA-HOP-05-067, November 2005.

http://www.ops.fhwa.dot.gov/wz/info_and_outreach/public_outreach_guide.pdf

In September 2004, FHWA published updates to the work zone regulations at 23 CFR 630 Subpart J. Known as the Work Zone Safety and Mobility Rule, this rule applies to all state and local governments that receive federal-aid highway funding. This guide—one of four developed by FHWA to prepare agencies to comply with the Work Zone Safety and Mobility Rule—is designed to help transportation agencies plan and implement effective public information and outreach campaigns.

The guide's final section describes several strategies to communicate information about projects and provides examples of the strategies in use. Appendices provide sample templates for developing public information and outreach strategies and plans.

NCHRP Report 500: Volume 17, A Guide for Reducing Work Zone Collisions, NCHRP, 2005.

http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_rpt_500v17.pdf

This guide presents objectives for improving work zone safety and related strategies that span the full range of engineering, enforcement and education. Topics of specific interest include:

- A discussion of increasing the work zone knowledge and awareness of drivers, workers and agency personnel begins on page 120 of the PDF.

- Page 128 of the PDF addresses work zone training programs and manuals for designers and field staff.

The guide notes that many states provide field manuals that offer full-scale policies and procedures or address specific areas of concern with work zone setups. See page 13 of this Preliminary Investigation for examples of field manuals produced by state DOTs.

Work Zone Mobility and Safety Fact Sheet Series, FHWA, various dates.

<http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheets.htm>

This series of 17 fact sheets highlights specific projects and practices used by one or more agencies to improve mobility and safety in work zones. The fact sheets include:

- Fact Sheet 3, Work Zone Safety Awareness Week.
<http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet3.htm>
- Fact Sheet 9, Arkansas Uses Public Outreach to *Pave The Way* During Interstate Rehabilitation.
<http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet9.htm>
- Fact Sheet 13, Work Zone Training: Examples of What Agencies Are Doing.
<http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet13.htm>
- Fact Sheet 15, Midwest Work Zone Roundtable—Improved Work Zone Management and Operations Through Collaboration.
<http://www.ops.fhwa.dot.gov/wz/practices/factsheets/factsheet15.htm>

State Education and Outreach Practices

Committees, Working Groups and Task Forces

The targeted efforts of committees and working groups help agencies put the spotlight on work zone safety. Below we highlight a Caltrans task force and the committee-based efforts of seven states—Illinois, Iowa, Louisiana, Minnesota, Texas, Vermont and Washington.

California

Task Force on Work Zone Safety, Caltrans.

http://www.workzones.ucdavis.edu/index.php?title=Main_Page

This task force was established as “an open committee to consider how to improve driver and worker safety, reduce congestion, and improve efficiency” with initial participants drawn from attendees of FHWA-sponsored workshops. This web site provides access to meeting notes (the most recent entry is for September 17, 2009) and other resources.

Illinois

Work Zone Safety Task Force, Illinois Department of Transportation.

<http://www.dot.state.il.us/workzone/taskforce.html>

Established to “define measures to increase the protection for highway workers from traffic injuries and fatalities resulting from motorists traveling through their work zones or areas where they are working on Interstate highways,” this task force includes representatives of the labor trades, contractor organizations, state and federal transportation agencies, and agencies related to enforcement and safety.

- Increased penalties for work zone speeding with appropriations for increased state police patrols on construction projects.

- Strengthening judicial penalties for repeat offenders.
- Legislation enabling video enforcement of traffic laws in work zones.

Other recommendations or initiatives include:

- Reaching out to drivers' education programs.
- Revising the "Rules of the Road," public service announcements, and corporate safety sponsorships to increase overall work zone safety awareness.
- Revising agency policies to provide motorists with work zones that are consistent in appearance.

Iowa

Iowa Work Zone Safety Committee, Iowa Department of Transportation.

<http://www.iowadot.gov/traffic/sections/itsauwz/wzpolicy.htm>

This committee oversees work zone traffic safety issues that affect the traveling public and road workers within temporary traffic control zones. Areas of oversight include design policies, standard road plans, specifications, training, research and new product evaluation. Committee members also conduct field reviews during the construction season to observe traffic control installations and recommend changes for future work zones.

Louisiana

Work Zone Task Force, Louisiana Department of Transportation and Development (DOTD).

<http://www.ops.fhwa.dot.gov/wz/practices/factsheets/pdfs/factsheet13.pdf>

Formed in 2001, the task force created 45 recommendations in eight work zone categories, including work zone training. In response to the recommendations, the Louisiana DOTD established a policy for law enforcement training that requires certification in work zone traffic control for all police officers working on project sites, including proper placement of police officers and patrol vehicles.

Minnesota

Statewide Work Zone Safety Committee, Minnesota Department of Transportation.

<http://www.dot.state.mn.us/trafficeng/workzone/wzcommittees.html>

This committee, which includes key Mn/DOT employees and stakeholders external to Mn/DOT, provides a forum for identifying work zone safety problems, helps to set priorities, and recommends direction to the Office of Construction and Innovative Contracting, Office of Maintenance and Security and Office of Traffic, Safety and Operations.

Texas

Work Zone Safety Working Group, North Central Texas Council of Governments.

<http://www.nctcog.org/trans/safety/WrkZneSfty.asp>

This working group, made up of transportation professionals from the north central Texas region, investigates the use and effectiveness of strategies that could reduce the number of fatalities and injuries that occur in work zones. A Work Zone Strategy Table is available at

<http://nctcog.org/trans/safety/WrkZneSftyImproveTable.pdf>.

Vermont

Work Zone Working Group; see "VTrans Recognized for Lifesaving Highway Safety Program," Vermont Agency of Transportation, Press Release, November 9, 2007.

<http://www.aot.state.vt.us/pressreleases/2007/November/WorkZoneSafetyAward.htm>

Established in 2002 by VTrans, the Work Zone Working Group provides a mechanism to raise awareness about work zone safety and establish uniformity in work zone operation so both drivers and workers know what to expect when traveling through or working within a work zone. The group includes members from VTrans, FHWA, Associated General Contractors of Vermont, the Vermont Occupational

Safety and Health Administration, the Vermont League of Cities and Towns, the Vermont Local Roads Program, the Governor's Highway Safety Program, local law enforcement, local fire services and utility companies.

Washington

Work Zone Safety Task Force, Washington State Department of Transportation.

<http://www.wsdot.wa.gov/safety/workzones/taskforce.htm>

The Work Zone Safety Task Force (WZSTF) was established in 1993 by executive order as the work zone policy-making group for WSDOT. The task force meets twice a year and includes members from several state agencies and industry representation including WSDOT, FHWA, Washington State Patrol, roadway contractors and others. The Traffic Control Oversight Committee, Safety Products Team and Technical Subcommittee report to the task force and are responsible for various work zone-related training and technical standards development and oversight.

The task force's work plan is available at <http://www.wsdot.wa.gov/NR/rdonlyres/31D4C856-27B6-44BE-B575-0774375AB0A8/71572/WZSTFworkplanOctober2010.docx>. One of the completed items in the work plan addresses the sharing of information to advise project managers on appropriate work zone strategies and effective management decisions. Implementation strategies include:

- Using conferences for information exchange, promoting work zone issues and offering services.
- Using the WZSTF Technical Subcommittee to develop implementation strategies and solutions.
- Having region experts play a more active role at the project level to oversee and assist with development of traffic management plans.
- Consulting with each region to determine work zone needs and produce an action plan.
- Revising plans and approval documents to be more specific with regard to work zone requirements.

Work Zone Safety Awareness Campaigns

Below we provide information about work zone safety awareness campaigns at the national and state levels, including a web-based clearinghouse of information that can serve as jumping off point for an in-depth examination of campaigns across the country.

National Resources

National Work Zone Awareness Week, FHWA.

http://www.ops.fhwa.dot.gov/wz/outreach/wz_awareness.htm

This event began in 2000 through the coordination and sponsorship of FHWA, AASHTO and the American Traffic Safety Services Association (ATSSA). The annual campaign is held in April, at the start of construction season, to encourage safe driving through highway construction sites. See http://www.workzonesafety.org/news_events/awareness_week/2011#state for resources and information about state efforts to promote National Work Zone Awareness Week.

Related Resource:

“Fully Aware: Work-Zone Safety Message Is Starting to Saturate the U.S.,” James S. Baron, *Roads and Bridges*, Vol. 44, No. 1, January 2006: 52-57.

<http://www.roadsbridges.com/Fully-Aware-article6629>

This article discusses the genesis of National Work Zone Awareness Week and focuses on a few state work zone safety campaigns.

Highway Work Zone Safety & Awareness Program for New Drivers: The “Turning Point” Campaign, FHWA.

http://ops.fhwa.dot.gov/wz/outreach/new_driver.htm

“Turning Point” was formulated to make new drivers aware of work zone hazards and provide them with guidance on safely negotiating work zone situations. The campaign is intended for use primarily in the driver education process.

Campaign Programs, The National Work Zone Safety Information Clearinghouse, American Road & Transportation Builders Association, Texas Transportation Institute, FHWA.

http://www.workzonesafety.org/public_awareness/

This web site provides details of campaign programs developed by state, federal and other private or public agencies for educating the public on work zone safety. A brief description of each campaign is followed by information about videos, publications and other promotional materials, when available. Also included are a link to the agency’s web site and contact information.

Selected State Campaigns

Illinois

Annual Work Zone Safety Calendar Contest, Illinois Department of Transportation.

<http://www.dot.il.gov/trafficsafety/WZS/WZScontest.html>

Illinois DOT, along with the Illinois State Board of Education, ATSSA and the Illinois chapter of ATSSA, coordinates this statewide contest. The top two finalists in each category move on to compete in the National Work Zone Safety Calendar Contest sponsored by ATSSA.

Louisiana

A Vested Interest in Safety, Louisiana Department of Transportation and Development.

<http://www.dotd.la.gov/pressreleases/release.aspx?key=1642>

This new campaign will collect and display photos of individuals wearing orange safety vests. Louisiana DOTD is inviting members of the community to participate by submitting “vested” photos of themselves, coworkers, friends and community leaders to DOTD’s Public Affairs Office via email.

“TIMED 2 Drive Safe: A Work Zone Safety Education Initiative for Teens,” Dana Newsome, *ITE Annual Meeting and Exhibit; Compendium of Technical Papers*, 2008.

Citation at <http://trid.trb.org/view.aspx?id=921429>

In April 2007, Louisiana’s TIMED (Transportation Infrastructure Model for Economic Development) Program launched “TIMED 2 Drive Safe,” a public awareness campaign promoting National Work Zone Awareness Week.

Related Resource:

TIMED 2 Drive Safe Louisiana, Louisiana Department of Transportation and Development.

<http://www.timedla.com/drivesafe/>

This web site provides documents, statistics and a Road Rules Quiz for this safety awareness program geared toward teens.

Maryland

Road Ready E-Construction Brochure, Maryland State Highway Administration, 2011.

<http://www.roads.maryland.gov/OC/RoadReady2011.pdf>

Road Ready provides a list of the major projects along Maryland state highways. The brochure was designed in an all-electronic format this year, and each project listed includes links to more information and/or a map. Also included is information on nearby scenic byways to provide motorists with alternate routes to consider when avoiding construction zones.

Minnesota

Public Service Announcements, Work Zone/Winter Safety, Minnesota Department of Transportation.
<http://www.dot.state.mn.us/workzone/media.html>

Find links here to public service announcements related to Minnesota's move over law and general work zone safety.

North Carolina

Initiatives and Campaigns: Work Zone Safety Program, North Carolina Department of Transportation.
<http://www.ncdot.org/programs/workzonesafety/initiatives/>

Find information here about current and past work zone safety initiatives and campaigns, including the Buddy Barrel and Connie Cone program mascots.

Ohio

Look Up, Hang Up and Go Slow for the Cone Zone

<http://www.dot.state.oh.us/Services/Pages/SlowfortheConeZone.aspx>

In the fall of 2010, Ohio DOT began an expansion of its Look Up, Hang Up and Go Slow for the Cone Zone campaign by broadcasting the message on the state's electronic highway message boards. The campaign is aimed at educating drivers about the dangers of distracted driving in an effort to reduce the 5,000 accidents in construction zones last year.

Utah

Know Where Know Why

<http://www.udot.utah.gov/main/f?p=100:pg:0::::T,V:3375>

This web site provides resources for media use to inform the public of the impacts of the 2011 construction season. Utah DOT helps motorists "know where know why" with:

- A new interactive web site at <http://kwkw.udot.utah.gov/>.
- Construction updates by email or Twitter.
- Weekly updates by texting "UDOT" to 53535.
- Weekly construction updates on local TV news.

Work Zone Safety and Mobility Programs and Policies

Below we highlight state programs and policies developed to meet the requirements of the federal Work Zone Safety and Mobility Rule, calling attention to the sections of the programs that address education and outreach.

Colorado

Work Zone Safety and Mobility Rule: Procedures Document, Colorado Department of Transportation, January 2009.

http://www.coloradodot.info/library/traffic/traffic-manuals-guidelines/lane-close-work-zone-safety/work-zone-safety-mobility/WZSM_Procedures.pdf

Page 37 of the PDF provides a listing of tools and strategies to disseminate information to the public with regard to work zone safety.

Idaho

Work Zone Safety and Mobility Program, Idaho Department of Transportation, December 2008.

<http://itd.idaho.gov/highways/docs/Work%20Zone%20Safety%20and%20Mobility%20Policy%20Revision%20-%20December%202008%20-%20Official%20Copy.pdf>

See page 19 of the PDF for Table 3.1, ITD Public Information and Outreach Strategies for Significant Projects; Table 3.2, ITD Project Information and Outreach for Non-Significant Projects, begins on page

22 of the PDF. These tables identify the individual or department responsible for implementation, the primary target audience, benefits, issues, timing and the relative cost to the project.

Michigan

Work Zone Safety and Mobility Manual, Michigan Department of Transportation, January 2010.

http://www.michigan.gov/documents/mdot/MDOT_WorkZoneSafetyAndMobilityManual_233891_7.pdf

Page 114 of the PDF includes a checklist for use in conjunction with the public information plan developed for all significant projects.

Oregon

Maximizing Investments in Work Zone Safety in Oregon, Oregon Department of Transportation, Final Report SR-500-380, May 2011.

http://www.oregon.gov/ODOT/TD/TP_RES/docs/Reports/2011/500_380_WZSafetyweb.pdf?ga=t

This report examines the effectiveness of the work zone safety public education program in terms of message and media. The report's review of research on engineering, enforcement and education efforts to address work zone safety revealed the following, from page 42 of the PDF:

- Traffic enforcement is expensive. It is critical to be selective in choosing the projects and specific construction activities. This requires ongoing evaluation and a willingness to modify deployment. Intelligent transportation systems may improve the impact of enforcement.
- FHWA's Work Zone Safety and Mobility Rule requires annual assessments and the development and tracking of performance measures. This component has the potential to encourage states to select the most effective approaches and improve their results.
- Using technology, whether it is to enhance traffic control, enforcement or communication with travelers, offers significant potential.
- Some states have made providing travelers with real-time information a priority. Travelers can use up-to-date information to choose alternative modes, routes and travel times, and avoid areas of extreme congestion.
- Significant resources are devoted to public awareness campaigns related to work zone safety. While thought to enhance traffic safety, there are no formal evaluations of the effectiveness of these campaigns.

Texas

TDOT Work Zone Safety & Mobility Manual, Texas Department of Transportation, November 29, 2007.

http://www.tdot.state.tx.us/Chief_Engineer/assistant_engineer_design/design/TDOTWorkZoneSafetyMobilityManual.pdf

Public information strategies begin on page 54 of the PDF. The manual highlights TxDOT's "Get In the Zone" and "Be Alert, Arrive Unhurt" media campaigns.

Work Zone Safety Training

State DOT Training Programs and Resources

Colorado

Work Zone Safety and Mobility Rule: Procedures Document, Colorado Department of Transportation, January 2009.

http://www.coloradodot.info/library/traffic/traffic-manuals-guidelines/lane-close-work-zone-safety/work-zone-safety-mobility/WZSM_Procedures.pdf

See page 40 of the PDF for training requirements for staff and others performing work related to work zones.

Indiana

Indiana Department of Transportation Policies, Processes & Procedures on Work Zone Safety & Mobility Pursuant to 23 CFR 630 Subpart J, Indiana Department of Transportation, October 2007.

http://www.in.gov/dot/div/contracts/standards/INDOT_Work_Zone_Safety_Mobility_Policy_web.pdf

Appendix C, INDOT's Work Zone Safety & Mobility Training Plan, begins on page 38 of the PDF. INDOT specifications currently require contractors to identify a Certified Traffic Control Supervisor on each project that employs temporary traffic control. INDOT maintenance staff are required to have training in flagging and work zone traffic control; training is provided through the highway technician training program. Periodic training updates are required. This document reports on a plan to expand work zone training requirements to include design, traffic and traffic operations, and construction staff in training on queue/delay estimating, flagger operation, and work zone management, design, operation and inspection.

Iowa

Video Training Series, Associated General Contractors of Iowa, Iowa DOT, FHWA, undated.

<http://www.iowadot.gov/workzone/videos/wztraining.htm>

This series of 12 safety-training videos focuses on the human factor in the safety training of workers to present a documentary-type look at the dangers of the work zone and the safety considerations critical for all workers. Each video is 10 to 13 minutes in length; instructional guidelines are available for each video. The series includes:

One Step from Death

This introductory program in the Highway Work Zone Safety series shows five accident simulations based on typical safety problems found in highway work zones.

Traffic Control Safety

This program emphasizes worker awareness of the dangers and safety considerations associated with the setup, operation/maintenance and takedown of traffic control equipment.

Mowing Operations and Maintenance Safety

This program describes a variety of short-term highway operations from snow plowing to patching, from the least dangerous to the most dangerous. It emphasizes awareness of hazards and individual responsibility for safety where standard traffic controls are at a minimum.

For more information or to order the videos:

Jim Hogan

Library Coordinator

Center for Transportation Research and Education

(515) 294-9481, hoganj@iastate.edu

Kentucky

Evaluation of the Work Zone Safety and Mobility Rule, Kentucky Transportation Cabinet, Research Report KTC-09-10, March 2009.

http://www.ktc.uky.edu/Reports/KTC_09_10_SPR_361_07_1F.pdf

Appendix B, Description of Training Courses, begins on page 32 of the PDF. The appendix provides information about a series of courses aimed at qualifying workers under the Cabinet's policy for safe mobility through work zones. This series, known as the Work Zone Traffic Control Employee Qualification Program, includes three courses: Basic Work Zone Traffic Control and Flagger, Work Zone Traffic Control Technician, and Work Zone Traffic Control Supervisor. Appendices C through D provide course-related materials.

Missouri

616.14.6 Training; Work Zone Safety and Mobility Policy, Missouri Department of Transportation, last modified June 23, 2011.

http://epg.modot.org/index.php?title=616.14_work_zone_safety_and_mobility_policy#616.14.6_Training

From the web site: All MoDOT personnel, contractors, law enforcement, and permittees will be trained in temporary traffic control design, deployment, operation, enforcement and maintenance commensurate with their level of responsibility. Individuals may gain this training through either department-provided courses or outside sources. MoDOT currently provides training on flagging, TMA [Traffic Management Advisor] operation, and basic and advanced technical principles pertaining to design, setup, maintenance, management and evaluation of work zones.

Related Resources:

Work Zone Technician Training

http://epg.modot.org/index.php?title=616.21_Work_Zone_Technician_Training

From the web site: Prior to operating any equipment employees shall complete the appropriate required training. Each person whose actions affect temporary traffic control work zone safety, from the upper-level management through field workers, should receive training appropriate to the job decisions each individual is required to make.

Advanced Work Zone Training

http://epg.modot.org/index.php?title=616.22_Advanced_Work_Zone_Training

From the web site: To better educate those responsible for designing and managing temporary traffic control in work zone safety considerations, MoDOT has created this course, "Advance Work Zone Training." The course is the third part of a curriculum pertaining to work zones. Upon completion of the course, the participants will be certified as a "Work Zone Specialist" (WZS). MoDOT will have a WZS involved in every aspect of the traffic control plan from preliminary to post-construction work.

North Carolina

Work Zone Traffic Control Qualification and Training Program, North Carolina Department of Transportation.

<http://www.ncdot.org/doh/preconstruct/wztc/WZTCTrainingProgram/default.html>

This web site provides links to documents related to NCDOT's training program, including frequently asked questions, a description of safety knowledge levels and approved training resources.

Related Resources:

Work Zone Qualification and Training Component; North Carolina Department of Transportation's Implementation of the FHWA Final Rule on Safety & Mobility 23 CFR 630 Subparts J & K, North Carolina Department of Transportation, June 6, 2011.

<http://ncdot.org/doh/preconstruct/wztc/final%20rule/ImportantDocs/NCDOTFinalRuleImplementation.pdf>

This document describes the knowledge levels needed for work zone safety and implementation dates for the training of the following types of workers: transportation planners, design engineers, traffic and safety engineers, temporary traffic control designers and program managers, regional construction managers, construction project staff, maintenance staff, and contractor and utility staff.

North Carolina Department of Transportation Work Zone Safety Basic Knowledge Document, North Carolina Department of Transportation, February 4, 2011.

http://ncdot.gov/doh/preconstruct/wztc/WZTCTrainingProgram/ImportantDocs/BKD_2_7_2011.pdf

This 68-page document provides critical information for those working inside highway rights of way in North Carolina and includes topics such as administrative issues, construction staging, things that affect workers being seen by drivers, and more.

Work Zone Traffic Control Rodeo, North Carolina Department of Transportation.

http://www.ncdot.org/doh/preconstruct/wztc/Rodeo/info_wz.html

This one-day training course features hands-on training using NCDOT specifications and standard drawings focused on the following subject areas:

- Overview of the NCDOT Work Zone Safety Basic Knowledge Document.
- Advance warning signs.
- Traffic control devices.
- Basic lane and road closures.
- Traffic control for moving and mobile operations.

Virginia

Work Zone Safety: Work Zone Traffic Control Training Procedures, Virginia Department of Transportation, Memorandum, September 21, 2007.

http://www.virginiadot.org/business/resources/wztc/wztc_training_procedures.pdf

VDOT identified Work Zone Traffic Control Training Champions in each district and affected division to implement training procedures. Topics addressed in this document include course review and evaluation, approved courses and training requirements and categories. Find additional information about VDOT's work zone safety training program at <http://www.virginiadot.org/business/trafficeg-WZS.asp>; scroll down to "Work Zone Traffic Control Training Requirements."

Field Guides and Manuals

California

Work Zone Enforcement (COZEEP/MAZEEP): Pocket Guide, Caltrans, California Highway Patrol, undated.

http://www.dot.ca.gov/hq/construc/safety/cozeep_mazeep_pocket_guide.pdf

This two-page template pocket guide can be used to inform staff about work zone enforcement in specific project areas.

Kentucky

Guidelines for Traffic Control in Short Duration/Mobile Work Zones, Kentucky Transportation Cabinet, March 2008.

http://kyt2.evasiv.com/assets/files/uploads/08shortdurationmobile_final.pdf

This 32-page pocket guide focuses on temporary traffic control in short duration and mobile work zones. It contains basic principles, a description of standard traffic control devices used in work areas, guidelines for the application of the devices, and typical application diagrams.

Minnesota

Temporary Traffic Control General Guidelines, MnMUTCD Field Manual, Minnesota Department of Transportation, 2011.

http://www.dot.state.mn.us/trafficeng/publ/fieldmanual2011/fm_2011_ttc_guidelines.pdf

This five-page document provides guidelines in selecting an appropriate temporary traffic control layout, enhancing the layout and installing the temporary traffic control zone. Also included is a checklist for establishing a temporary traffic control zone.

Missouri

Traffic Control for Field Operations, Missouri Department of Transportation, 2002.

http://epg.modot.org/index.php?title=616.23_Traffic_Control_for_Field_Operations

This manual is available in its entirety online and as individual PDF files for each of the 28 typical work zone applications. The guide, which is based on Part 6 of the Manual on Uniform Traffic Control Devices and MoDOT policies and best practices, establishes the minimum expectations for temporary traffic control measures on the state highway system. The manual is applicable to incident management, maintenance, permit and utility operations performed on MoDOT rights of way.

North Carolina

Work Zone Safety Pocket Guide: Work Zone Safety Guidelines for Construction, Maintenance, and Utility Operations, Institute for Transportation Research and Education, North Carolina State University, 2002.

<http://www.itre.ncsu.edu/HWY/products/order/index.asp> (to place an order for the guide)

This guide is for field supervisor use when installing basic work zone traffic control. The pocket-size laminated guide contains drawings and examples of how to set up traffic control on two-lane and multilane roadways.

Ohio

Guidelines for Traffic Control in Work Zones, Ohio Department of Transportation, June 2008.

<http://www.dot.state.oh.us/Divisions/Quality/LTAP/Documents/GuidebookforTrafficControlinWorkZonesJune2008.pdf>

This 56-page handbook, which summarizes some of the guidelines listed in the Ohio Manual of Uniform Traffic Control Devices, contains basic principles, a description of the standard traffic control devices used in work areas, guidelines for the application of the devices, and typical application diagrams.

Pennsylvania

Work Zone Pocket Guide for Municipalities & Utilities, Pennsylvania Department of Transportation, Publication No. 208, August 2010.

<ftp://ftp.dot.state.pa.us/public/PubsForms/Publications/PUB%20208.pdf>

Information in this 39-page pocket guide comes from PennDOT and FHWA publications to illustrate the guidelines for proper work zone traffic control.

Virginia

Work Zone Safety: Guidelines for Temporary Traffic Control, Virginia Department of Transportation, June 2007.

http://www.virginiadot.org/VDOT/Business/Const/asset_upload_file22_51640.pdf

This 74-page pocket guide is based on the 2005 Virginia Work Area Protection Manual.

Related Resource:

Virginia Work Area Protection Manual: Standards and Guidelines for Temporary Traffic Control, Virginia Department of Transportation, June 2011.

http://www.virginiadot.org/business/resources/wztc/Virginia_WAPM_2011_web.pdf

This final draft, a revision of the 2005 edition, is Virginia's version of Chapter 6 of the 2009 edition of the Manual on Uniform Traffic Control Devices.

Wisconsin

Work Zone Safety: Guidelines for Construction, Maintenance, & Utility Operations, Wisconsin Department of Transportation, January 2006.

<http://www.dot.wisconsin.gov/business/rules/docs/wzsb.pdf>

This 60-page handbook presents information and guidelines for temporary traffic control, including examples of typical traffic control applications.

National and Regional Resources

Training, The National Work Zone Safety Information Clearinghouse.

<http://www.workzonesafety.org/training/>

This web site provides a searchable database of work zone training courses and programs available nationwide. Use the site to browse a list of courses, programs and workshops in more than 50 topic areas. Each entry includes a link to an agency web site and contact information.

Work Zone Training and Guides, FHWA, May 2010.

http://ops.fhwa.dot.gov/wz/outreach/wz_training/wz_training_4_23_10.xls

This compendium of work zone training and guides includes information such as format, length, target audience, cost and point of contact for each training opportunity. The workbook includes spreadsheets for the following categories:

- Design for work zones.
- Inspection of work zones.
- Intelligent transportation systems.
- Law enforcement.
- Management of work zones.
- Nighttime work zone operations.
- Short duration work zones.
- Traffic control in work zones.
- Worker safety.
- Work zone guides and documents.

Work Zone Safety Grants, FHWA.

http://ops.fhwa.dot.gov/wz/outreach/wz_grants.htm

The Work Zone Safety Grant program provided funding for the development of highway work zone safety training and guidelines to prevent and reduce work zone injuries and fatalities. This four-year program made available \$17.2 million of grant funds for fiscal years 2006 through 2009. The program covers three areas: construction worker training; guideline development; and guideline training for state and local governments, transportation agencies and other groups.

Related Resource:

Grant Products by Audience and Topic Area, The National Work Zone Safety Information Clearinghouse, February 2, 2011.

http://www.workzonesafety.org/files/documents/training/fhwa_wz_grant/grant_product_topic_table.htm

Grantees have developed more than 25 guideline publications, 24 training modules and 2 software applications/programs under the Work Zone Safety Grant program. Additional products are under

development or in the planning stages. This table provides links to publications by audience (field worker or technical staff) in the following topic areas:

- Worker/construction safety.
- Vehicles and heavy equipment.
- Flagging operations.
- Utility/maintenance work zones.
- ITS and technology.
- Temporary traffic control.
- Public information.
- Operations strategies.
- Impacts analysis.
- Traveler safety.

Roadway Safety Plus: A Road Construction Industry Consortium Program, Laborers Health & Safety Fund of North America, 2011.

http://www.workzonesafety.org/training/courses_programs/rsa_program

Roadway Safety Plus (RSP+) is a standard method of providing worker awareness training for road workers. The RSP+ download includes interactive Macromedia modules, trainee booklets, toolbox pamphlets, printable screen guides, and an instructor manual. Most of the materials are provided in three languages—English, Spanish and Portuguese—and the Macromedia modules offer professionally narrated speech under the instructor’s control.

Development of a Work Zone Training Program, Smart Work Zone Deployment Initiative, Iowa Department of Transportation, FHWA, Final Report, August 2009.

http://www.intrans.iastate.edu/smartwz/reports/Bai_WZSafety_Training.pdf

Researchers developed a web-based training program for highway work zone safety that covers such topics as signs, markings, highway traffic signals and temporary traffic control. The program includes a 50-question quiz; trainees with a test score higher than the passing grade receive a certificate via email. Users can update the program with new information as needed.

National Highway Institute Courses, FHWA.

This web site provides information about web-based and classroom training related to work zone safety offered by the National Highway Institute, including:

Design and Operation of Work Zone Traffic Control (Course Number FHWA-NHI-133112)

This one- or three-day course is part of the Certificate of Accomplishment in Work Zone Safety. Participants will learn about safest and most efficient work zone traffic controls, including the application of effective design and installation concepts, and using signs and markings for detours, construction zones and maintenance sites. The course also addresses legal, administrative and operational issues. Course information is available at

http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-380003&cat=&key=work%20zone%20safety&num=&loc=&sta=%25&typ=%25&ava=1&str=&end=&tit=&lev=&dr|=

Work Zone Traffic Control for Maintenance Operations (Course Number FHWA-NHI-133113)

This one-day course provides guidance and training for field personnel working in the planning, selection, application and operation of short-term work zones. The course addresses typical short-term maintenance activities occurring on two-lane rural highways and multilane urban streets and highways. Course information is available at

http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-

[133113&cat=&key=133113&num=&loc=&sta=%25&typ=&ava=&str=&end=&tit=&lev=&drl=.](#)

Construction Zone Safety Inspection (Course Number FHWA-NHI-133114)

This one-day (or 1.5-day) course provides training in the management of traffic control plans and the inspection of construction zone safety devices. Participants receive instruction in traffic control plan review, inspection of traffic control procedures and safety devices, and the resolution of discrepancies from the traffic control plan, as well as on deficiencies in safety hardware maintenance. Course information is available at http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-133114&cat=&key=1331&num=&loc=&sta=%25&typ=&ava=&str=&end=&tit=&lev=&drl=.

Advanced Work Zone Management and Design (Course Number FHWA-NHI-133115)

This three-day course provides participants with advanced levels of knowledge and competencies with technical and nontechnical aspects of work zone traffic control practices including work zone planning, design, project management and contract issues. Course information is available at http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-133115&cat=&key=work%20zone%20safety&num=&loc=&sta=%25&typ=%25&ava=1&str=&end=&tit=&lev=&drl=.

Maintenance of Traffic for Technicians (Course Number FHWA-NHI-380098)

This free five-hour web-based training presents information about the placement of, field maintenance required for, and inspection of traffic control devices. Course information is available at http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-380098&cat=&key=&num=380098&loc=&sta=%25&tit=&typ=&lev=&ava=&str=&end=&drl=.

Maintenance of Traffic for Supervisors (Course Number FHWA-NHI-380099)

This free five-hour web-based training focuses on the design of a traffic control plan. Course information is available at http://www.nhi.fhwa.dot.gov/training/course_detail.aspx?num=FHWA-NHI-380099&cat=&key=&num=380099&loc=&sta=%25&tit=&typ=&lev=&ava=&str=&end=&drl=.

Research in Progress

“Evaluation of Work Zone Safety Messages,” Cleveland State University, expected completion date January 1, 2011. (A final report does not appear to be available.)

<http://rip.trb.org/browse/dproject.asp?n=26963>

This project will evaluate the effectiveness of the public information outreach campaigns related to work zone safety that appear as advertisements on billboards throughout the Cleveland region during the construction season.

“Improving Highway Work Zone Safety,” University of Kansas, Lawrence, expected completion date not known.

<http://rip.trb.org/browse/dproject.asp?n=15010>

Researchers from Kansas, North Carolina, North Dakota and Texas are collaborating to study drivers’ behavior and develop an intelligent warning sign system, the best safety practices for contractors, and work zone safety education and training programs.