

OREGON TRAFFIC CONTROL DEVICES COMMITTEE

Meeting Agenda

January 16, 2015

[ODOT TLC Bldg.](#), Alsea Conference Room
4040 Fairview Industrial Drive, Salem

9:00 – 9:10	Welcome / Building Orientation / Introductions / Approve Previous Minutes	Jeff Wise
9:10 – 9:15	Business from the Audience <i>Public Comment on Non-Agenda Topics</i>	Jeff Wise
9:15 – 9:35	Presentation on January NCUTCD Meeting <i>Information</i>	Scott Beard
9:35 – 10:00	Pedestrian Channelization Devices in Work Zones <i>Information / Discussion</i>	Cindy Schmitt Scott McCanna
10:00 – 10:30	Draft School Area Guide <i>Information / Discussion</i>	Gary Obery
10:30 – 10:45	Roundtable <i>Local Jurisdiction Issues - Discussion</i>	All Committee Members
10:45 – 10:50	Not-on-Agenda Items	Jeff Wise
10:50 – 10:55	Agenda Items for Future Meetings	Jeff Wise

2015 OTCDC Meeting Schedule

<i>Date</i>	<i>Location</i>
January 16	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
March 20	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
May 15	(w/ITE), TBD
July 17	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
September 18	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem
November 20	ODOT TLC Bldg., Alsea Conf. Rm., 4040 Fairview Ind. Dr., Salem

Oregon Traffic Control Devices Committee

[November 21, 2014](#)

Meeting Minutes

ODOT [Technical Leadership Center](#), 4040 Fairview Industrial Drive SE, Salem, Oregon

Members Present: [Mike Caccavano](#), City of Redmond, Chairperson; [Ed Chastain](#), Lane County, Vice Chair; [Bob Pappé](#), Secretary, ODOT State Traffic Engineer; [Brian Barnett](#), City of Springfield; [Joseph Marek](#), Clackamas County; ; [Pam O'Brien](#), DKS Associates; [Jim Rentz](#), OSP; [Cynthia Schmitt](#), Marion County; [Jeff Wise](#), ODOT Region 5

Member Present via i-link: [Alex Georgevitch](#), City of Medford

Others Present: Ian Amweg, Washington County; Ed Fischer, Retired ODOT; Kevin Hottmann, City of Salem; Jabra Khasho, City of Beaverton; Julia Uravich, Marion County; Doug Bish, Craig Black, Scott Cramer; Kevin Haas, Katie Johnson, Eric Leaming, Kathi McConnell, Chris Rowland, Amanda Salyer, Heidi Shoblom, Zahidul Siddique, ODOT Traffic/Roadway Section.

Others present via i-Link: Eric Niemeyer, former Jackson County Engineer, Charles Radosta, Kittelson & Associates; Joel McCarroll, ODOT Region 4.

Introduction – Approval of Minutes – Additional Agenda Items

Chair Mike Caccavano called the meeting to order at 9:00 a.m. and called for introductions from all attending. Ed Chastain then moved, Pam O'Brien seconded, and the committee approved the [July 2014 OTCDC Meeting Minutes](#). Mike announced he and Pam O'Brien have been reappointed to the OTCDC by the League of Oregon Cities and Oregon ITE.

Business from the Audience/Public Comment on Non-Agenda Topics

None to report.

All Roads Transportation Safety Program (ARTS) Update

Doug Bish presented a [summary](#) of activity in the development and implementation of the All Roads Transportation Safety (ARTS) Program since the [January Update](#) of the Program. Oregon averages 1,700 fatal and serious injury crashes each year. About half of these occur on other than state highways. ARTS is about packing as much bang for the buck from mostly HSIP funds into projects to reduce these crashes wherever they are

shown to be occurring with proven safety counter-measures. These funds were traditionally spent only on state highways but half of fatal and serious injury (Fatal and A) crashes occur on local agency roads and ARTS is about treating them equally. Both hot spot and systemic fixes are to be addressed.

The process will be overseen by ODOT Regions. Doug's presentation reviewed progress in getting started next spring. ODOT is in the process of hiring a consultant to select a "300% list" of projects to be considered statewide for traditional crash hotspots.

The ARTS program primarily uses federal funds from the Highway Safety Improvement Program (HSIP). MAP 21 stresses the Highway Safety Improvement Program (HSIP) funds are only for locations or corridors where it is determined the specific project action can, with confidence, produce a measurable and significant reduction in fatalities or serious injuries. Hot Spot lists will be developed and then shared by ODOT with local agencies who will give input into the final selection of the hot spot projects.

Systemic selections will be through an application process, funding for each emphasis area will be split roughly proportional to the amount of Fataals and A's, addressing systemic improvements through proven counter-measures. These may be on priority corridors for Roadway Departure, Intersections or Pedestrian/Bike crashes. This would include relatively low-cost things like rumble strips, as listed in the Crash Reduction Factors list. There is expected to be some overlap between the two lists.

ODOT regions are using their own discretion in addressing systemic measures, through an application process with local jurisdictions. Any agency can apply, the judgment will be made based on best benefit-cost in each emphasis area in every region, roughly proportional to the amount of Fataals and A's. Once a refined list of projects is developed for each area, a multi-disciplinary assessment will assure the right counter-measure is selected for the location.

Federal funds require matching funds – currently 7.78% for HSIP. In most cases this will have to come from the road authority. ODOT will be working with local agencies to develop refined project lists for the STIP through the spring of 2014. Further questions about how this process will go should be addressed to the appropriate ODOT region.

FENDER BENDER Sign R16

Jim Rentz discussed how Oregon State Police Captain Anderson noted fender bender signs in use in Washington and wondered why we don't use them in Oregon. He said he also sees them as great PSA signs along the freeway. The sign is to make clear to drivers in cases where the crash is not severe, they should move their vehicle so traffic can get past them. Heidi Shoblom said there was no particular reason it's not being done, there just hasn't been a demand up until now. She [illustrated](#) the MUTCD version for the committee. Another [version](#) Idaho has long used is not MUTCD approved and includes a question mark. Ed Fischer suggested the question mark at the end of the non-approved sign was a good element which makes it clear IF you've had a fender bender, you should move off the roadway. The MUTCD version may be misread as "Fender Bender Ahead".

In Oregon, [ORS 811.717](#) requires vehicles to be moved from the roadway in cases like this. The consensus from the committee was to find places where the MUTCD version can be placed, and where PSA's can be produced to get the message out. This may include use of full-color variable message signs in conjunction with traffic safety campaigns.

CARS (Curve Advisory Reporting System) Evaluation Update

Eric Leaming [reviewed](#) the history and progress on this system for setting safe speeds on curves. CARS has proven to be much faster, efficient, and more consistent in providing the data needed to determine advisory speed numbers on these signs with just one pass in each direction rather than numerous passes (although Eric recommends ≥ 3 passes for greater accuracy). It's been tested on 6 highways in ODOT Region 2. Some initial software and connectivity issues were fixed. Compared to the spreadsheet ODOT's developed, CARS has come up with the same result at 50% of 76 curve approaches, within 5 mph at 91% of these approaches, and if different, CARS is generally a bit higher than spreadsheet recommendations.

Eric said the results justify recommendations to:

- Use CARS method for curve advisory investigations
- Use average calculated advisory speed of ≥ 3 runs
- Collect CARS data on all highways (consistency in recommended speeds)
- Projects already designed: OK if used spreadsheet

[Rieker Incorporated](#) wants to roll out this software via state DOT's rather than individually to local jurisdictions. ODOT has bought 10 copies of the inclinometer hardware/associated software access and is willing to loan one them out to any jurisdiction for a limited time. The data is encrypted and so cannot be used without the software (which is hosted on Rieker's "cloud"). An ongoing subscription to their service is required in order to continue using the unit although raw data can afterwards be downloaded to spreadsheet software.

City and county representatives at the meeting were interested in getting full access to the CARS hardware/software and could find borrowing it from ODOT each time it is needed to be problematic in terms of lost time waiting their turn and travel time to get and return the equipment.

ODOT will do what they can to make the equipment available to any jurisdiction but there are issues like were recently encountered regarding signal timing programs. So ODOT's Traffic-Roadway Section must follow ODOT's contract rules. Still, experience has shown consistency is not currently as high it should be on existing advisory speed signs and this system should be a significant improvement and safety advance, which should make it worth the time and effort.

Eric said he will document all the results of testing in a report by the end of the year. This new method of ball banking may qualify in some cases for funding under the new ARTS program.

Optional Use of 3-Section FYA Signal Faces

Subsequent to FHWA's recent [announcement](#) of approval for three-section flashing yellow arrows for experimental use, Eric Niemeyer [presented](#) a history of his advocacy for these signals since 2001 in Jackson county. Eric's research and experimentation showed these signals are effective in reducing crashes and improving safety – and the public better understands the yellow flashing arrow than the green ball (even) with supplemental signing. The feds had required a four-section signal with a separate steady yellow arrow (rising yellow) head above the flashing yellow head. He discussed how this also saves money in installation, timing and maintenance than previous treatments. Research results tend to support the 3-section FYA. Eric said he'd like the state to get permission from the feds and to allow use of this treatment statewide. Interim approval does not include use in the doghouse signal assembly.

Craig Black [presented](#) ODOT's 11/18/2014 letter to FHWA requesting approval for the optional use of the 3 section FYA head for all agencies in Oregon. ODOT has been working on this for a couple months now. Once approved for use in Oregon, any agency wanting to activate/install this type of PPLT should contact Craig to record the 3 section FYA locations.

Because of the implications to what ODOT will use as a standard for left and right protected/permissive turn heads, Scott Cramer and Craig have met with all of the ODOT Region Traffic Engineers and Signal Operations staff, Electricians and TSSU to discuss this matter as it pertains to ODOT signals. That group agreed to installation/activation of this type of Protected Permissive Left Turn (PPLT) Signal on from one to five test locations in each Region. After a trial period of up to a year, ODOT will re-assess whether or not to change policy and/or standards for left and right turn head configurations.

For the left turn phasing, the Voyage software already allows the use of the middle section for both flashing (permissive) and solid (terminating the phase) modes. They continue to monitor the FYA mode by landing the wire driving the middle section on the opposing pedestrian yellow terminal or the pedestrian green if there is no opposing pedestrian phase as happens with the 4 section head.

For the right turn phasing, Voyage does not include this in its software. However, Traffic Operations has been working on the command box coding to get it to work; periodically talking with NW Signal and working with ODOT's TSSU to ensure it will work correctly thru the conflict monitor. The goal is eventual inclusion of the PPRT phasing into the Voyage software. The coding has been challenging for Roger Boettcher who has been working on this to get it to operate correctly in all modes of operation including free, coordination, EV and Rail preemption. Challenges to this include reaching the limits of our display outputs and what we can monitor. In about a year, ODOT will reassess how these phasing options will affect our traffic signal policy and design standards.

There was discussion of the timing of the ODOT request to FHWA and whether/how the committee should have been involved in that. Craig, Bob and others noted the request

required no jurisdiction to use the optional configuration and any agency could still request permission under their own jurisdiction. The advisory nature of the committee was discussed and Bob indicated he expected to be able to receive advice and recommendations from the committee when time and circumstances make it possible and needed.

Eric said he has expertise in programming WAPITI with the 3-section FYA. If anybody needs help, he can be reached at trafficguru@hotmail.com.

Chair & Vice Chair election for 2015 – Proposed Meeting Schedule for 2015

Mike opened the floor for nominations for 2015 OTCDC officers. Mike then nominated Jeff Wise for 2015 Chair and Brian seconded. Jeff said he would accept the nomination. Pamela then volunteered for Vice-Chair. There being no further nominations, Jeff and Pam were duly elected by popular voice vote.

Local Jurisdiction Issues - Discussion

Pedestrian Channelization Devices in Construction Zones

Cindy Schmitt said a discussion item in a future meeting might be requirements for pedestrian channelization devices in work zones. She said they're having difficulty in finding good applications in county work zones and noticed ODOT doesn't seem to be using them much either. They're expensive and have not caught on yet. Contractors don't have them so Marion County actually bought a set for them to use. But they're having issues on the job determining what the applications are expected to achieve. ODOT review of their use in the field makes an issue of whether they're being used properly and eligible for federal funding. So she'd like help in nailing the requirements down.

Mike agreed this could be a good topic for future discussion. Bob suggested Scott McCanna could come in and help clarify the requirements. The pedestrian accesses plays into ADA access. Whether lack of room to accommodate them will be recognized in meeting federal requirements is also an issue.

Not On Agenda

Bob Papp brought up the upcoming session of the [Oregon Legislature](#), advising the committee he will be more circumspect regarding anything which may come up regarding legislation because ODOT has to be more careful to speak through the Director's office when the Legislature is in session.

Bob then updated the committee on the ET 2000 guardrail [end treatment](#). The ET-Plus has been removed from ODOT's Qualified Products List. ODOT has about 808 of the Plus's installed around the state. ODOT has not made a decision on if they'll have to be replaced. ODOT has many more blunt-end guardrail treatments (10k) from earlier days

which are more dangerous than the ET-Plus. ODOT has been searching for but not yet found any cases in available crash data where the ET-Plus failed and resulted in a fatality. So far, what we have [seems to be working](#). Trinity is going to have the ET-Plus re-tested to satisfy FHWA and the results of the re-testing will determine if they are again permitted on federally funded projects. Bob would like anybody who has stories, data on any such failure of this guardrail in a crash to let him know.

Bob also reported on ODOT's research into rumble strips and [lowering the roadside noise](#). Sinusoidal grinding pattern so far isn't clear that it's an improvement.. They appear to be about as loud as regular rumble strips when heard from outside the car on a test strip on Hwy 42 in Roseburg. California had better results and the only difference seems to be a wider pattern. Oregon has been trying to keep rumble strips narrower to maximize bike lane/shoulder width.

Future Meeting Dates for Agenda Planning Purposes

Next year meeting dates were [provided](#) for member review, approval.

Agenda Items for Future Meetings

- Draft School Area Guide
- Single Unit Truck Weight Signing
- TRB National Committee Meeting Update

Adjournment

Mike adjourned the meeting at 12:06 p.m.



A Guide to School Area Safety

A publication of the

**Oregon Department of Transportation
Traffic-Roadway Section
and
Traffic Safety Division**

January 2015

INTRODUCTION TO SCHOOL AREA SAFETY

A broad spectrum of authorities, experts and advocates has been involved in bringing this guidebook to you. It is published by the Oregon Department of Transportation as a joint effort of the Transportation Safety Division and the Traffic-Roadway Section, cooperatively with the Oregon Department of Education's Pupil Transportation Section. A listing of all those involved in the creation of the guidebook can be found at the end on the Acknowledgements page.

The guidebook is intended to provide citizens, road authorities, and other officials throughout the state with a comprehensive reference on school zones and safe travel to and from school. It does not establish policy or standards for the Oregon Department of transportation or other road authorities in the state.

The guidebook is based on the Federal Highway Administration's 2009 Manual on Uniform Traffic Control Devices. It is updated as needed to maintain current information for the community of people, government and schools involved in the effort to keep children safe going to and at school. This revision incorporates changes to the MUTCD, Oregon laws, and information related to resources available for school area safety.

The guidebook is organized for quick reference. The first section covers the discussion of the statutes and rules for school area safety. The next section gives information on the Safe Routes to School comprehensive approach to planning and implementing improvements for student safety traveling to and around each school and school district. Following this discussion are the school area designations and the traffic control possibilities for all of them. An overview of tools and their use for all aspects of school area safety programs follows. A Resources section lists recognized sources for traffic safety and engineering aspects of safe routes to school plus a number of other programs, resources, and publications for further information.

Your participation in ensuring the usefulness and relevance of this guidebook is invited. The contact information for the guidebook is listed below. The guidebook is available on the internet at: <http://www.odot.state.or.us/traffic/publicat.htm>.

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SECTION I - LAWS AND RULES ABOUT SCHOOL ZONES

Traffic Control Devices

The Oregon Department of Transportation (ODOT) adopts uniform standards for traffic control devices, including signs and pavement markings for all streets open to the public in Oregon as required by statute (ORS 810.200). These standards must be largely in agreement with national standards. ODOT has adopted the federal Manual on Uniform Traffic Control Devices (MUTCD) to meet this requirement. Part 7, Traffic Controls for School Areas, contains the standards for traffic control in school areas.

Traffic control in school areas is a highly sensitive subject. The concern for the safety of children on their daily journey to and from school continues to generate community interest in traffic control devices that protect children from the negative impacts of traffic and provides them a safe environment to travel to and from school. Communities look to more police and adult guards for school duties, more traffic signals and more signs and pavement markings as the way to provide the desired environment. Such measures, however, are limited by available resources and must be used judiciously within the framework established by the MUTCD. Unnecessary measures can be costly and tend to lessen the respect for controls that are needed. The MUTCD offers this rationale for following a uniform application of traffic control devices: (Section 7A.01):

Regardless of the school location, the best way to achieve effective traffic control is through the uniform application of realistic policies, practices, and standards developed through engineering judgment or studies.

Pedestrian safety depends upon public understanding of accepted methods for efficient traffic control. This principle is especially important in the control of pedestrians, bicycles, and other vehicles in the vicinity of schools. Neither pedestrians on their way to or from school nor other road users can be expected to move safely in school areas unless they understand both the need for traffic controls and how these controls function for their benefit.

Procedures and devices that are not uniform might cause confusion among pedestrians and road users, prompt wrong decisions, and contribute to crashes. To achieve uniformity of traffic control in school areas, comparable traffic situations must be treated in a consistent manner. Each traffic control device and control method described in Part 7 fulfills a specific function related to specific traffic conditions.

A uniform approach to school area traffic controls assures the use of similar controls for similar situations, which promotes uniform behavior on the part of motorists, pedestrians, and bicyclists.

This update to the *Guide for School Area Safety* is based on the standards and guidance contained in the latest version of the MUTCD (2009) available at the time of publication. Readers are encouraged to review the latest MUTCD at: <http://mutcd.fhwa.dot.gov/>.

An Engineer must ultimately take responsibility for engineering decisions involving traffic control devices. Traffic engineers should follow the principles and practices as contained in the Manual on Uniform Traffic Control Devices and other applicable engineering guidance. Engineering decisions should support the safety, health, property, and welfare of the public.

Oregon Revised Statutes (ORS)

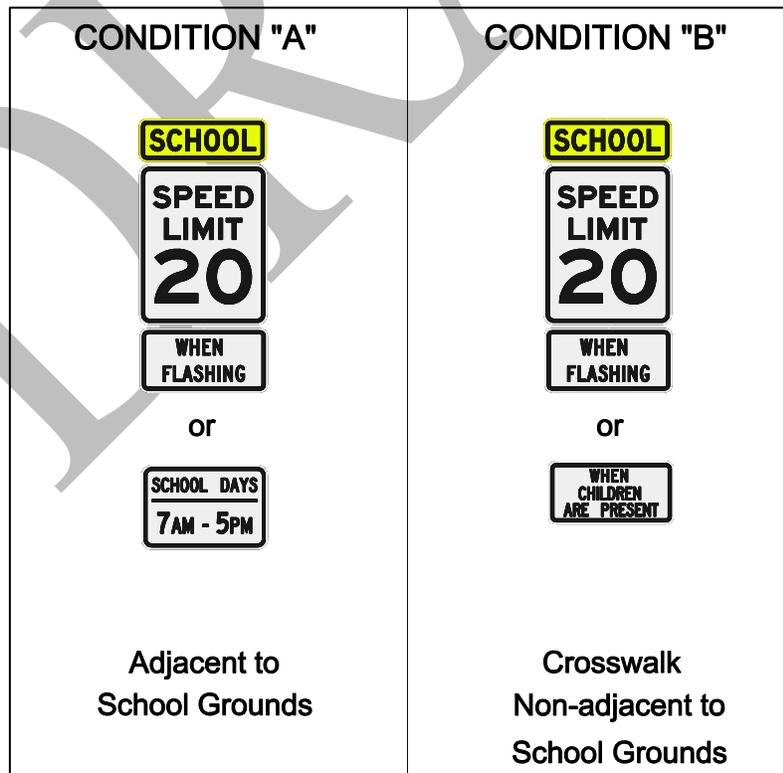
The definitions and authorities for school zones in Oregon is established by Oregon Revised Statutes (ORS) and Oregon Administrative Rules (OAR). Both school zones and school speed zones are statutory. A **school zone** is defined by **ORS 801.462** as one of two types: adjacent to the school zones grounds or at a crosswalk away from the school grounds. School zones are created by posting signs identifying the school site or crossing. These can be signs such as the school name at each end of the school grounds, or a School Children Crossing sign at a crosswalk. A school zone does not automatically have a 20 mph school zone speed limit.

Examples of where a school zone would not necessarily have a school speed zone include crossings at signalized intersections, since all traffic is fully controlled, and schools where no children might regularly walk or bike to school.

ORS 801.462 defines the term “school” for the purposes of regulating school zones. The ORS states that a “school” means a public or private educational institution for one or more levels kindergarten through grade 12 or a publicly funded early childhood education program located in a building currently or previously owned by a school district as defined in ORS 330.005. Oregon Revised statutes are available on the internet at: <http://landru.leg.state.or.us/ors>.

Other School Zone Laws:

- **ORS 811.111 describes school zone speed limits.** School speed zones are defined for the two types of school zone areas: those adjacent to school grounds (Condition A) and crosswalks not adjacent to school grounds (Condition B). If the school speed zone is in Condition A, adjacent to school grounds, the school speed is in effect when a flashing light indicates when children are coming to or leaving the school or, if there is no flashing light, between the hours of 7 AM and 5 PM on a day when school is in session. For Condition B, at a crosswalk away from school grounds, the school speed



limit is in effect with either the flashing light or when children are present as described in ORS 811.124. Each road authority (state, county, or city) determines where school speed zones are located.

- **ORS 811.124 defines “when children are present”** as when children are occupying or waiting to cross in the crosswalk or when there is a traffic patrol member at the crosswalk. Note that “when children are present” applies only at a crosswalk away from the school grounds and applies at any time and on any day.
- **ORS 810.243 allows for the operation of flashing lights** as traffic control devices to indicate children are traveling to or from school. When used for this purpose, the lights may be operated only at times when children are scheduled to arrive or leave school.
- **ORS 811.235 establishes the condition of increasing fines in school zones** when signs giving notice of increased fines are posted (like “FINES HIGHER”). The area of increased fines is from the sign indicating increased fines to a sign indicating the end of increased fines or the end of the school zone.

The law allows increasing of fines at school zones when lights are flashing or, for a crosswalk away from the school grounds, when the definition of “when children are present” is met. The fines are higher for specified offenses which include:

- all Class A or Class B traffic violations (such as failure to obey a traffic patrol member, not yielding to a pedestrian in a crosswalk or not stopping at a stop sign or traffic signal);
 - Class C or Class D violations relating to exceeding a legal speed;
 - Reckless driving as defined by law;
 - Driving while under the influence of intoxicants (DUII);
 - Failure to perform the duties of a driver involved in an accident or collision as required by law;
 - Driving with a suspended or revoked license; or
 - Fleeing or attempting to elude a police officer.
- **ORS 810.245 establishes the ability of road authorities to install signs giving notice of increasing fines in school zones.** These signs must be posted as per ORS 811.235 to enforce higher fines in school zones.
 - **ORS 811.550 identifies places where stopping, standing, and parking are prohibited**, such as a bike lane, on a crosswalk, or within 20 feet of a crosswalk at an intersection. Some exemptions permitted in ORS 811.560 are applicable for pickup and discharge of passengers.
 - **ORS 810.180** gives the Oregon Department of Transportation the authority to designate speeds (i.e., speeds different from statutory speeds) on many of the public roadways in Oregon. These designated speeds are established by a written order after an investigation. Decisions on designated speeds are made jointly by ODOT and the city, county, or other agency with road authority.
 - **ORS 811.020 Passing stopped vehicle at crosswalk; penalty.** (1) The driver of a vehicle commits the offense of passing a stopped vehicle at a crosswalk if the driver:
 - (a) Approaches from the rear another vehicle that is stopped at a marked or an

unmarked crosswalk at an intersection to permit a pedestrian to cross the roadway;
and

(b) Overtakes and passes the stopped vehicle.

(2) The offense described in this section, passing a stopped vehicle at a crosswalk, is a Class B traffic violation.

Traffic Patrol Laws

ORS 339.650 “Traffic patrol” defined. As used in ORS 339.650 to 339.665, “traffic patrol” means one or more individuals appointed by a public, private, or parochial school to protect pupils in their crossing of streets or highways on their way to or from the school by directing the pupils or by cautioning vehicle operators.

ORS 339.655 Traffic patrols authorized; medical benefits; rules. (1) A district school board may do all things necessary, including the expenditure of district funds, to organize, supervise, control or operate traffic patrols. A district school board may make rules relating to traffic patrols which are consistent with rules under ORS 339.660 (1).

(2) The establishment, maintenance and operation of a traffic patrol does not constitute negligence on the part of any school district or school authority.

(3) A district school board may provide medical or hospital care for an individual who is injured or disabled while acting as a member of a traffic patrol.

ORS 339.660 Rules on traffic patrols; eligibility; authority. (1) To promote safety the State Board of Education after consultation with the Department of Transportation and the Department of State Police, shall make rules relating to traffic patrols.

(2) A member of a traffic patrol:

(a) Shall be at least 18 years of age unless the parent or guardian of the member of the traffic patrol has consented in writing to such membership and ceases to be a member if such consent is revoked.

(b) May display a badge marked “traffic patrol” while serving as a member.

(c) May display a directional sign or signal in cautioning drivers where students use a school crosswalk of the driver’s responsibility to obey ORS 811.015.

ORS 339.665 Intergovernmental cooperation and assistance in connection with traffic patrols. (1) The Department of Education and the Department of Transportation shall cooperate with any public, private or parochial school in the organization, supervision, control and operation of its traffic patrol.

(2) The Department of State Police, the sheriff of each county or the police of each city may assist any public, private or parochial school in the organization, supervision, control or operation of its traffic patrol.

ORS 811.015 Failure to obey traffic patrol member; penalty. (1) The driver of a vehicle commits the offense of failure to obey a traffic patrol member if:

(a) A traffic patrol member makes a cautionary sign or signal to indicate that students have entered or are about to enter the crosswalk under the traffic patrol member’s direction; and

(b) The driver does not stop and remain stopped for students who are in or entering the crosswalk from either direction on the street on which the driver is operating.

(2) Traffic patrol members described in this section are those provided under ORS 339.650

to 339.665.

(3) The offense described in this section, failure to obey a traffic patrol member, is a Class A traffic violation.

ORS 811.017 Failure to yield to traffic patrol member; penalty. (1) The driver of a vehicle commits the offense of failure to yield to a traffic patrol member if the driver fails to stop and yield the right of way to a traffic patrol member who:

(a) Has entered a crosswalk for the purpose of directing students who have entered or are about to enter the crosswalk; and

(b) Is carrying a flag or wearing something that identifies the person as a traffic patrol member.

(2) For purposes of this section, “traffic patrol” has the meaning given that term in ORS 339.650.

(3) The offense described in this section, failure to yield to a traffic patrol member, is a Class A traffic violation.

School Zone Administrative Rules

- **OAR 734-020-0005** adopts the Manual on Uniform Traffic Control Devices as the uniform system of marking and signing highways in Oregon, as required under ORS 810.200, including school area signing and marking.
- **OAR 734-020-0015** is related to designating speeds by establishing speed zones other than statutory speeds (but does not apply to school zones). The OAR describes the process for establishment of speed zones on public roads.
- **OAR 581-021-0100** establishes the operation and authorities for School Traffic Patrols. The **Oregon Traffic Patrol Manual** published by the Oregon Department of Education is adopted as the operation guide. The Department is also responsible for distribution of equipment, establishing, assisting and training patrols. The school districts are responsible for requesting patrol training and assistance. School districts may also opt to operate school traffic patrols by district guidelines that are approved by the State Superintendent of Public Instruction as meeting or exceeding the standards in the [Oregon Traffic Patrol Manual](#).

Oregon Administrative Rules are available on the internet at:

<http://arcweb.sos.state.or.us/banners/rules.htm>

Other Guidelines

The Oregon Department of Transportation also has adopted other guidelines which relate to school zones. These include the “Speed Zone Manual”, “ODOT Traffic Manual” and the “Sign Policy and Guidelines”. The Speed Zone Manual discusses the speed zone investigation process. The ODOT Traffic Manual discusses the use and application of related traffic control devices. The Sign Policy and Guidelines identifies the signs authorized for school areas along with guidelines on their location. *The above are available on the internet at:*

<http://www.oregon.gov/ODOT/HWY/TS/Pages/publications.aspx>

SECTION II - SAFE ROUTES TO SCHOOL PROGRAM



Safe Routes to School started as a grass roots effort that has spread worldwide. It has grown from these beginnings into a national movement recognized by Congress. Through the 2005 passage of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), Congress designated a total of \$612 million toward developing the National Safe Routes to School Program. Prior to the federal funding in the United States, several states and communities already had dedicated funding for Safe Routes to School programs.

The federally-funded Safe Routes to School Program is administered in Oregon by ODOT's Transportation Safety Division. There is a network of federal, state and local levels with many dedicated organizations and government agencies. In some ways, the grass roots coalitions are the backbone of the program. The latest information, contacts, and guidance for the program can be found on Safety's web site at <http://www.oregon.gov/ODOT>

An update to this section is coming soon. Please do not review at this time.

What It Is

The goal of the Safe Routes to School program is to focus on identifying and reducing barriers and hazards to children walking and biking within 2 miles of the school. Safe Routes to School programs encourage and enable more youth to walk and bike to school.

The program works with the 5 Es as a strategy: Engineering, Enforcement, Education, Encouragement, and Evaluation. The program brings together school administrators, teachers, support staff, parents, students, neighbors, police, and community service providers in School Teams and Community Task Forces. The School Teams and Community Task Forces study why more kids aren't walking and biking to school. Then they develop strategies to increase safety and the number of kids walking and biking to school. These strategies are based on a balanced and integrated approach of enforcement, engineering, encouragement, education and evaluation.

History

Oregon House Bill 3712, enacted in 2001, is known as Oregon's Safe Routes to School legislation. This bill created statute ORS 195.115, which directs cities and counties to work with school districts to identify barriers and hazards to children walking and biking to and from school. These hazards are typically compiled in a safe routes plan for each school. In 2005, two pieces of legislation passed, one at the federal level and the other at the state level that created a funded Safe Routes to School Program. The Transportation Safety Division of ODOT has the oversight and administration of this program.

SECTION III - SCHOOL ZONES

What is a School Zone?

A school zone is a section of roadway adjacent to a school or a school crosswalk where signs designating school activity are present. The signs marking a school zone may include any words or symbols that give notice of the presence of a school zone. Some traffic fines can be higher in a school zone if signs are posted giving notice of higher fines.



What is a School Speed Zone?

A school speed zone is a special 20 MPH speed zone for schools allowed by statute and defined by school speed signs. The school speed zone begins at the SCHOOL SPEED LIMIT 20 sign and ends at the END SCHOOL SPEED LIMIT sign or END SCHOOL ZONE sign.



School speed zones should begin a minimum of 200 feet from the school property line or school crosswalk, whichever is determined to be most appropriate. Ideally, school speed zones should be kept short to enhance driver compliance. When school property frontage along the roadway is lengthy and/or fenced, consider focusing the school speed zone on the school crosswalk, potential crossing areas, or exposed/unfenced portions.

What is not a School Speed Zone?

Not all school crossings or school areas are posted with a SCHOOL SPEED LIMIT 20 sign. There may be areas adjacent to school grounds where the need for reduced school speeds may be deemed unnecessary. For instance, residential streets on the side or back of a school may not need a reduced speed if travel speeds are already slow. A high school with good traffic control or a school with no students who might regularly walk or bike to school may have no need of a reduced speed. A school crosswalk away from the school controlled by a traffic signal may have no need of a reduced speed. Unless a school area or crossing has SCHOOL SPEED LIMIT 20 signs, the area is not considered a school speed zone.

Who Determines that a School Speed Zone is Appropriate?

Each road authority (state, county, or city) determines where school speed zones are located along roadways under their jurisdiction. Locations and limits for school speed zones should be determined on the basis of an engineering study. The school speed zone should be established as per the applicable sections of the Manual on Uniform Traffic Control Devices and other adopted policies.

The Engineer for the road authority is encouraged to use these guidelines to help determine the need for a school speed zone. A local jurisdiction that does not have the engineering expertise is encouraged to contact their local Region ODOT Traffic Engineering office for assistance or hire a consulting engineer. School districts and local traffic safety committees can request a school speed zone study through the local road authority.

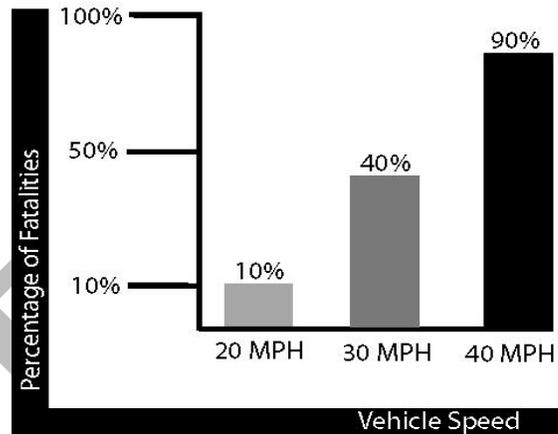
Why is Going 20 mph So Important?

Slower speeds provide more reaction time to unexpected child actions. Any collision at a lower speed will generally cause less injury, as well. The fatality rate for pedestrians or bicyclists struck by a vehicle at higher speeds is much greater than at lower speeds (see chart below). A pedestrian struck by a vehicle at 40 mph is almost always a fatality. If the vehicle is going 30 mph a pedestrian has 60% chance of surviving, but will likely not be walking away from the collision and may have sustained life altering injuries. Even five mph can make a big difference to the pedestrian.

Locations Where School Speed Zones are Encouraged

Where all the following conditions exist, a school speed zone is recommended when supported by an engineering study:

- The roadway is adjacent to the school grounds (not limited to front of school buildings);
- There is at least one marked school crosswalk within the proposed school zone which is not protected by a signal or STOP sign;
- The property houses a full time public or private school;
- The school is elementary or middle level (schools that include grades K-8) instruction; and,
- The posted speed is 40 MPH or below.



Locations Where School Speed Zones Require Further Justification

Where any of the following conditions exist, an engineering study should be the basis to determine whether there is a need for a school speed zone:

- The school is a public or private high school
- The school is a publicly funded early childhood education program housed in a building that is or was previously owned by a school district;
- The marked school crosswalk is at a signalized intersection;
- The marked school crosswalk is at a STOP sign;
- The marked school crosswalk is on a roadway segment not adjacent to the school grounds; or,
- Children walking on the school's Safe Routes to School Plan do not cross the roadway in this area.

If there are children walking to school on a high speed or high traffic volume road, the road authority should first consider providing improved pedestrian facilities for greater safety for the students. A reduced school speed may also be considered as part of those improvements. A school speed zone provides the greatest margin of safety on high speed or high volume roads when implemented along with other pedestrian improvements such as sidewalks, crosswalk bulb-outs and crossing guards.

Locations Where School Speed Zones are Discouraged

School speed zones may not be appropriate where:

- The speed is posted at 45 mph or above and other means or routes are available to school children.
- All children are bused or driven to school, even short distances. The road authority should verify whether or not children currently do or desire to walk or bike to school. Some children, especially middle school students, may prefer walking or biking to school even when buses are available.

At schools adjacent to the roadway where there is no pedestrian or bicycle traffic, a school zone may be established with signs indicating the presence of the school area, but it is generally not appropriate to establish a school speed zone. A school speed zone is typically not used to protect motor vehicle traffic. In lieu of establishing a school speed zone, a SCHOOL sign (establishing a school area without a reduced speed) may serve to warn motorists approaching the school area.

On roadways where the speed is posted 45 mph or more and school speed zones are justified by an engineering study, a range of options to reduce speeds and improve pedestrian safety should be evaluated in conjunction with the installation of the school speed zone. The engineering study should evaluate the feasibility of installing improvements such as curbs, sidewalks, narrowing the lanes, and/or installing median islands that would act to reduce prevailing speeds. Flashing beacons should be used to notify drivers of when the school speed zone is in effect. A REDUCED SCHOOL SPEED LIMIT AHEAD sign should be used in advance of the school speed zone. A speed zone study may be undertaken after the school speed zone is established and traffic calming elements are in place to see if a reduced posted speed for the roadway is appropriate.



What Is An Engineering Study?

An engineering study is a documented analysis and evaluation of site specific information, and includes the application of appropriate engineering principles and standards. Considerations in the engineering study may include, but are not limited to:

- *Crash history*
- *Traffic volumes*
- *Gap Study*
- *Number of bicyclists riding to school*
- *Number of pedestrians utilizing the school crossing*
- *Speed study for all directions of travel at the proposed location*
- *Examination of conditions adversely affecting pedestrian and bicycle safety (e.g.,*

availability of sidewalks and bike lanes, presence of curb ramps, location of bicycle parking, horizontal and vertical sight distance)

- *Examination of the school's drop-off and pick-up operations, including on-street parking controls and off-street parking facilities and their use*
- *Examination of the school's Safe Routes to School Plan including a review of planned adult crossing guards*
- *Input and participation in the engineering study by the school district, traffic safety committees and other community representatives (including participation in data collection and analysis)*

There are places where traffic control devices are in use but may not have been adequately investigated. These controls may not only be unnecessary and expensive to maintain, but more importantly, they may lessen respect for similar traffic control devices that are used in appropriate locations. Traffic controls in school areas should be applied based on sound guidelines and engineering studies.

DRAFT

SECTION IV – TRAFFIC CONTROL ELEMENTS

Signs

The MUTCD promotes uniformity in design of signs to include shape, color, dimension, symbols, as well as uniform application of signs. Consistency in application increases compliance as signs are quickly recognized and the messages are easily understood. The following guidance is provided as a service to road authorities in Oregon; it does not create a standard or supersede requirements found in the MUTCD or other local policies. Some road jurisdictions may have more stringent standards about the application or size of the signs. Please refer to the applicable road jurisdiction's standards for further information. The following guidance is based on the 2009 MUTCD and the ODOT Sign Policy and Guidelines. [Chapter 7](#) of the ODOT Sign Policy and Guidelines contains several example sign layouts for typical school zones.

Sign Sheeting

The 2009 MUTCD specifies that fluorescent yellow-green (FYG or strong yellow-green) background shall be used on all new school-related warning signs. Existing warning signs will be replaced with FYG-background signs as the current signs reach the end of their life or ODOT will change out the signs if the school district agrees to pay for the replacement. ODOT reserves the use of the fluorescent yellow-green (strong yellow-green or FYG) sheeting exclusively for school-related warning signs. The mixing of standard yellow and FYG background signs within a school area should be avoided. All school area signs should use high intensity sheeting or better.

School Zone Sign Assembly

The beginning of a school zones is established by posting a school sign (S1-1). The sign may be supplemented with an ALL YEAR or SCHOOL plaque (S4-3P).

In situations when a school zone or school speed zone may not be justified, signing the area with a diamond shaped "SCHOOL" (text) warning sign may serve to warn motorists of the proximity of the school and school grounds.



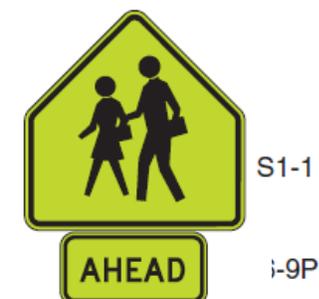
School Crosswalk Sign Assembly

The School Crossing Assembly consists of a school sign (S1-1) supplemented with a diagonal downward pointing arrow (W16-7P). The school crosswalk warning assembly may be used at school crossings that are adjacent to schools and along established school pedestrian routes. It can be used at signalized crossings (when justified by an engineering study) but may not be used at crossings controlled by STOP or YIELD signs.



School Advance Crossing Assembly

The School Advance Crossing Assembly (S1-1 & W16-9P) is used in advance of the School Crosswalk sign. This sign may be omitted when preceded by a school zone sign assembly.

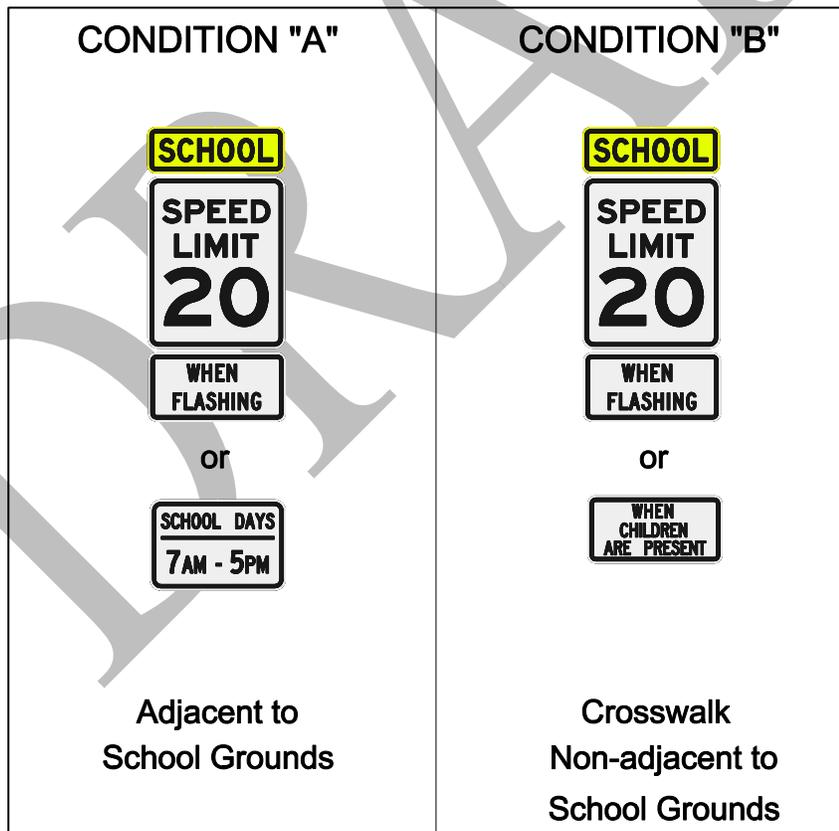


School Speed Signs

When a school speed zone is established, the School Speed Limit Assembly shall be used. The beginning of the school speed zone is indicated by the sign assembly which consists of a top plaque with the legend SCHOOL (S4-3), a SPEED LIMIT 20 sign (R2-1), and a bottom plaque indicating when the school zone is in effect. A School/Speed limit 20 combination sign (OS5-5 in ODOT Sign Policy & guidelines) may be used with a supplemental plaque in lieu of three separate signs.

As per the Oregon Revised Statute 811.111, possible bottom plaques include one of the following: WHEN FLASHING; SCHOOL DAYS/ 7 AM to 5 PM; or WHEN CHILDREN ARE PRESENT. If the WHEN FLASHING condition is used, the flashing units must be set to flash only during the times that students are scheduled to arrive or depart from school. If a timeframe is used on the plaque, it must adhere to the 7 AM to 5 PM specifically stated in the ORS. The conditions meeting the definition of WHEN CHILDREN ARE PRESENT is defined in ORS 811.124.

School speed zones are categorized into one of two types: those on streets adjacent to school grounds (Condition A), and those for crosswalks that are not adjacent to school grounds (Condition B). If the school speed zone is in Condition A, adjacent to school grounds, the bottom plaque must be either WHEN FLASHING or SCHOOL DAYS/ 7 AM to 5 PM. If the school speed zone is in Condition B, a crosswalk not adjacent to school grounds, the bottom plaque must be either WHEN FLASHING or WHEN CHILDREN ARE PRESENT.



The choice between the bottom plaques may be based on local practice, school needs, and district policy. School speed zones with flashing lights are generally more effective at slowing

vehicles. They should especially be considered for higher speed approaches (35 mph or greater).

End School Zone

The end of a school zone may be marked with an “END SCHOOL ZONE” sign or an “END SCHOOL SPEED LIMIT” sign. If both the school speed zone and the higher fines zone ends at the same location the “END SCHOOL ZONE” sign may be used. If there is not a higher fines zone then an “END SCHOOL SPEED LIMIT” sign may be used. See the MUTCD for appropriate alternatives.

A standard speed limit sign alone is not an acceptable substitute to end a school speed zone, but may be used in conjunction with either sign above to indicate the underlying speed of the roadway.

School Reduced Speed Zone Ahead Sign

If the posted speed is 35 mph or higher, a School Reduced Speed Ahead sign (S4-5) should be used to inform drivers of a school speed zone ahead. Section 7B.16 of the 2009 MUTCD details the sign. If used, the advanced warning sign should be placed at least the required minimum distance for the posted speed per the MUTCD prior to the school speed limit assembly.



School Bus Stop Ahead Sign

SCHOOL BUS STOP AHEAD signs are used in advance of locations where school buses stopping to pick up or discharge passengers are not visible for a minimum distance of 500 feet and there is no opportunity to relocate the bus stop to a location with better visibility. The sign shall have a minimum 30" x 30" size. These signs are not intended to be used everywhere a school bus stops to pick up or discharge passengers but for use only where terrain and roadway features limit the approach sight distance and where there is no opportunity to relocate the stop to another location with adequate visibility. Stops posted with these signs should be reviewed periodically to determine if they are still used.

Traffic Fines Higher Signs

The higher fine provision applies in school zones **only** if posted (as fines higher) **and** lights are flashing **or** the definition of “When Children Are Present” is met (the definition of “when Children are Present” can only be met at crosswalks not adjacent to school property). Road jurisdictions are allowed under ORS 810.245 to post signs warning of increased traffic fines within school speed zones. A school district may request the road authority to install a BEGIN HIGHER FINES ZONE (R2-10) sign or a FINES HIGHER plaque (R2-6P) as described in Sections 2B.17 and 7B.10 in the 2009 MUTCD. The “TRAFFIC FINES DOUBLE IN THIS SCHOOL ZONE” (OR4-21) sign and the smaller version “TRAFFIC FINES DOUBLE IN SCHOOL ZONES” sign (used off state highways) may be used until replacement is necessary.



Variable Message Signs

Variable message signs may be used in lieu of school speed limit assemblies, to inform drivers of the special school speed limit. The changeable messages signs may use blank out signs in order to display school speeds only during periods it applies. Their basic shape, message and layout should conform to the same standards as the fixed school speed assemblies.

A changeable message sign may also be used to display the speed of approaching drivers. The sign may be portable or permanently installed in conjunction with the School Speed Limit Assembly or Speed Limit Sign. Considerations for installing permanent speed displays with the School Speed Limit Assembly include the following:

1. Crash experience within the past three years
2. Prevailing travel speeds when children are arriving or leaving the school
3. Other pertinent factors such as installation and maintenance costs, public support, and the number of children who walk or bike to school at the entrances covered by the signs.

Parking Restrictions

Parking restrictions and other signs governing the stopping and standing of vehicles can be used to cover a wide variety of applications and can be a very effective tool for increasing school area safety. Visibility and control of traffic are some reasons for considering parking restrictions. Contact the road authority or local jurisdiction for regulations and any special requirements governing parking restrictions. Restrictions can include a variety of options including but not limited to the following: prohibiting parking at any time, limited-time parking, restricting the day or time of day or bus-only parking.



In-Street Pedestrian Signs

In-Street Pedestrian Crossing signs are intended to be used to remind drivers of the laws regarding right of way of pedestrians at unsignalized pedestrian crossings. Guidance on using In-Street Pedestrian crossing signs is given in section 2B.12 and 7B.12 of the MUTCD. The “STOP FOR” legend must be used in Oregon.

Before installing signs, each location should be reviewed separately in terms of site conditions and pedestrian safety. Signs should be installed on the centerline and as close as practical to the marked crossing without placing it in the crosswalk, typically one to five feet in advance of the crosswalk.

These signs have proven to be very effective at increasing motorist stopping compliance at crosswalks. They have been shown to achieve a level of stopping compliance similar to rectangular rapid flashing beacons in lower speed locations. They can be especially effective if placed and removed daily to indicate when children are arriving or departing from school.



The in-street pedestrian signs shall not be placed at stop or signal controlled intersections. Where there is a high volume of turning movements (especially large vehicles), an in-street sign may need to be placed on a raised island to prevent the need for frequent replacement. Narrow streets may pose a problem as the signs may not allow enough room for larger vehicles or unskilled drivers to pass without hitting the sign.

Supplemental Devices (i.e., Yellow Diamonds, Flashing Lights)

Overuse of supplemental devices tends to erode their effectiveness as safety devices. In order to preserve their usefulness as warning devices, yellow diamonds, flashing lights and other attention grabbers should only be used in school areas where the posted speed exceeds 30 MPH, the crossing is not signalized, and when an engineering study warrants their use. ODOT has a policy to only use yellow diamonds to temporarily highlight a change in regulatory conditions such as a revised speed limit or a new traffic signal.

Pedestrian activated warning lights at crosswalks may be an effective method for alerting drivers to the presence of pedestrian at a crosswalk. There are several types of these warning lights, such as rectangular rapid flash beacons and pedestrian hybrid beacons. Typically these devices are used in areas where special emphasis is desired.

Flashing Beacons for Indicating Children Arriving or Leaving School

The school speed assembly, "SCHOOL SPEED LIMIT 20 WHEN FLASHING", must be accompanied by flashing beacon lights to indicate when children are scheduled to arrive at or leave school. The statute ORS 810.243 requires that the beacons flash only when children are scheduled to arrive or leave school. The general practice is to set the beacons to flash approximately 30 minutes prior to the beginning of the school day and 15-30 minutes after the end of the school day. Typical flashing periods are at the beginning and end of the school day. Flashing may also occur for half day releases such as may occur at noon for half day kindergarten release. The road authority typically maintains and programs the flashers according to the school-provided schedule for the school year.

School beacons may be used with other plaques (e.g., "WHEN CHILDREN ARE PRESENT" at crosswalks away from school grounds) but must only flash when children are coming to or going from school.

School Flashers are not inexpensive; the estimated cost is \$5,000 to 10,000 for a side-mounted unit or \$25,000 for an overhead unit plus ongoing maintenance and power costs. If a school district requests flashing beacons on state highways, the school district may be required to pay the installation and utility costs.

Rectangular rapid flashing beacons (RRFB)

RRFB's consist of two rapidly and alternately flashed rectangular yellow LED arrays located between the crosswalk warning sign and the supplemental downward arrow plaque. These devices have a significant effect on driver stopping compliance rates. There is evidence that they increase the distance at which motorists begin to slow for a pedestrian in a crosswalk. Because of their relatively high installation costs and ongoing maintenance costs, their installation should be limited to locations where they are justified after a thorough consideration of vehicle volume and speeds, number of pedestrians, length of crossing, and other relevant factors. RRFB's should only be considered after other proven pedestrian safety measures such as median refuge islands and curb extensions are in place. Crossing guards are also a good option.

RRFB's may only be used in conjunction with a pedestrian crossing warning sign and they may not be used with traffic signals, stop signs, or yield signs. They should be located at least 200 feet from a school speed zone flasher to avoid confusion with the "WHEN FLASHING" condition on the school speed zone sign assembly. See the ODOT Traffic Manual section

6.6.7, and see FHWA's July 16, 2008 [Interim Approval for the Optional Use of Rectangular Rapid Flashing Beacons](#) for further guidance on the use of these devices.

Pavement Markings

Pavement markings have an important role to play in school area safety. They can be used to supplement the regulations or warnings of other devices such as traffic signs or they may obtain results that cannot be obtained by the use of any other device. However, pavement markings have definite limitations. They are obliterated by snow, may not be clearly visible when wet and may not be very durable when subject to heavy traffic. Pavement markings also require a higher degree of maintenance than other traffic control devices, resulting in recurring costs to the road jurisdiction.

Marked Crosswalks

A marked crosswalk will not, in and of itself, increase the level of safety for pedestrians. In an effort to ensure that marked crosswalks are placed where they are needed, an engineering study is required before establishing marked crosswalks at locations other than signalized or stop controlled approaches to intersections. Marked crosswalks should generally be limited to locations where drivers are accustomed to stopping such as signalized intersections and all-way stop intersections. They may also be considered at locations with a high number of pedestrians or where adult crossing guards will be present daily. See ODOT's Criteria for Establishing Marked Crosswalks in the ODOT Traffic Manual for further guidance on the decision to mark or not mark a crosswalk. Longitudinal markings have been shown to be visible from significantly greater distances than the transverse crosswalk markings so their use is encouraged in places where drivers might not be accustomed to stopping. ODOT has established a practice of marking uncontrolled crosswalks with longitudinal (i.e., continental) markings and marking signalized and stop-controlled crosswalks with transverse crosswalk markings. A past ODOT practice still in use in some communities is to mark all marked crosswalks (signalized, stop controlled, or uncontrolled) in school areas with continental style markings.

Where marked crosswalks are installed at uncontrolled locations on roadways with more than one lane (including turn lanes) on each approach to a crosswalk, advance stop lines (see below) are strongly recommended to reduce multiple threat crashes.

Stop Lines

Stop lines are solid white lines normally 12 to 24 inches wide extending across all approach lanes and indicate the point at which vehicles are required to stop in compliance with the STOP sign, traffic signal, or other legal requirement. Stop lines are not ordinarily used with marked crosswalks unless it is desirable to stop vehicles in advance of the nearest crosswalk line. When used, stop lines shall be placed as near as practical to the intersecting roadway but should not be closer than 4 feet to the traveled way or crosswalk line.

Advance Stop Lines

Advance stop lines are stop lines set in advance of uncontrolled marked crosswalks on multi-lane roadways in order to provide additional time and visibility for pedestrians to avoid vehicles not stopping in adjacent lanes (i.e. multiple threat crashes). Advance stop lines (24-inch width) are ideally set back 30 feet in advance of uncontrolled marked crosswalks (but may be 20-50 feet). Advance stop lines should be used to reduce multiple threat crashes where marked

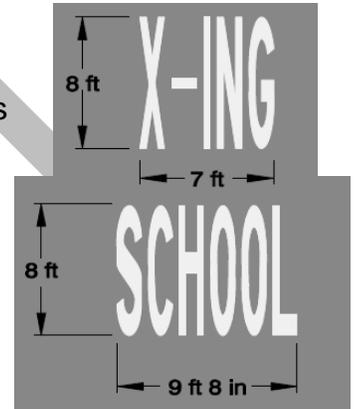
crosswalks are installed at uncontrolled locations on roadways with more than one lane (including turn lanes) on each approach. The STOP HERE FOR PEDESTRIANS (or pedestrian symbol) sign R1-5b or R1-5c must be used if an advance stop line is used for a pedestrian crosswalk. See “Advance Stop Lines” in the ODOT Traffic Manual for further Guidance.

Parking Restrictions

Road authorities may authorize curb markings to supplement standard signs or to replace signs if permitted by local ordinance.

Word and Symbol Markings

Word and symbol markings on the pavement may be used as a supplement, but are not required marking. Marking in the travel lane requires a high degree of maintenance and they should be used only as necessary. Letters and numerals should be white and 8 feet or more in height and if the message consists of more than one word, it should read up, i.e., the first word should be nearest to the driver. Where approach speeds are low, somewhat smaller characters may be used. Pavement messages should preferably be no more than one lane in width except school messages may extend to the width of two lanes. When a two-lane width is used, the characters should be 10 feet or more in height. SCHOOL is one of the more commonly used markings. See Section 7C.03 of the MUTCD for further guidance.



Maintenance of Signs and Markings

Regulatory and warning signs and pavement markings for school speed zones should be inspected routinely by the road authority. Preferably, inspections should occur before the beginning of each school year or towards the end of the school year to schedule maintenance during the summer. Damaged signs should be replaced.

If use of the school building or traffic patterns change, the school district should notify the road authority. Signs which no longer meet the criteria for school areas should be removed (such as where the school closes or the building use changes).

School Area Traffic Signals

School signals are standard traffic control signals erected at established school crossings on the basis of the need to create adequate gaps in the vehicular traffic stream for pedestrian crossings. When properly designed, located, and operated under conditions that fully warrant their use, school signals usually have either or both of the following **ADVANTAGES**:

- Considering initial and operating costs, school signals may represent an economy as compared with police supervision or crossing guards over a period of several years.
- Under conditions of favorable spacing, signals can be coordinated with adjacent signals to provide for continuous or nearly continuous movement of vehicular traffic.

The following **DISADVANTAGES** for signals should be considered when choosing a specific means of crossing control:

- School signal control has a much higher initial cost than police supervision or crossing guards. It should only be considered for locations where several years use is expected
- In some circumstances, the school signal control requires supplemental control by an adult, guard or school safety patrol (i.e., right turns on red).
- Signals can increase the frequency of some types of motor vehicle crashes (i.e., rear-end crashes).

A school signal may be warranted at an established school crossing when a traffic engineering study indicates that the number of adequate gaps in the traffic stream during the periods the children are using the crossing is less than the number of minutes in the same time period. Signals have the potential to disrupt traffic flows; they should be used only after other less restrictive means to exploit existing gaps have been considered (i.e., pedestrian refuges, in-street signs). See Section 4C.06 of the MUTCD for more information on school signals.

School Crossing Guards and Safety Patrols

Recommended practices for the organization, operation, and administration of a crossing guard program in Oregon are given in the [Oregon Traffic Patrol Manual For Schools](#) (Pupil Transportation, Oregon Department of Education). The information below is essentially a summary of some of the key points of that document.

There are two types of school crossing supervision: control of pedestrians and vehicles with adult crossing guards or police officers, and control of pedestrians only with student safety patrols. School Districts have the authority to use adults as safety patrol members or crossing guards. They can be an asset and an important segment of the traffic patrol program. Certain criteria should be used to determine at which location adult crossing guards are placed. The Department of Education suggests that generally, an adult crossing guard is needed:

- When the traffic situation at the school crossing is too hazardous to be navigated by children.
- When the crosswalk is so far from the school that it cannot be monitored by school officials.
- When it is difficult for children to observe traffic at all corners.
- For crossings close to school where children in great numbers are difficult to control.
- When there is a high volume of turning traffic to and from an arterial.
- When there is an excessive volume of pedestrian traffic across an arterial.
- When there is not at least one safe gap per minute during the crossing time.

When any **ONE** of these conditions exist, adult supervision may be necessary to create gaps in traffic, caution the traffic turning over crosswalks, and safely assist groups of children across the street. Customarily, crossing guards are used in elementary schools. In particularly hazardous situations, middle schools may wish to utilize crossing guards as well.

Crossing guards should not be directing traffic. Instead, they should be selecting opportune times to create a safe gap. Crossing guards may be used to provide gaps in traffic at school

crossings where an engineering study has shown that adequate gaps must be created. Crossing guards must wear a bright colored yellow, orange or strong yellow-green retroreflective ANSI class 2 high-visibility safety vest and a hat, and carry a school crossing flag or flagger paddle as recommended by the Oregon Department of Education. The Oregon Department of Education, Pupil Transportation has a 15 minute video, "Tips and Techniques for the Adult Crossing Guard" available upon request at 503-947-5600.

Student safety patrols should be authorized by the local school board. They do not direct traffic but they do supervise children using a crossing. School authorities should be responsible for organizing, instructing and supervising safety patrols with the assistance of the local police. They should be children from the fifth grade or higher and parental approval should be obtained in writing before a child is used as a member of the safety patrol. Student safety patrol members must wear a bright colored yellow, orange or strong yellow-green retroreflective ANSI Class 1 high-visibility safety vest. Student safety patrols carry a retroreflective 24" minimum square flag. The flag color may be red, yellow, or strong yellow-green. The Oregon Department of Education, Pupil Transportation Program provides technical assistance for establishing student safety patrol programs. A 30-minute program to help train Safety Patrols is available by contacting 503-974-5600.



SECTION V – STREET DESIGN ELEMENTS

What are the potential improvements to safety beyond the school zone signing and speed zone? When assessing the safety of the immediate area surrounding the school building, it is important to consider visibility and site design issues.

- Are there sight obstructions that should be corrected by restricting or removing parking or by trimming trees and shrubs?
- What accommodations have been made for children riding to school on bikes?
- Are the designated loading and unloading zones free from conflicts with other traffic?
- Are sidewalks needed to improve safety?

A thorough review of the current school route environment is the first step. Once problem areas are identified then design changes, route choices, and supporting education and law enforcement activities to improve those areas can be identified and enacted.

Pedestrian enhancements

Pedestrian enhancements are encouraged to increase the safety of crossings near and along the route to school. Often, requests are received for marked crosswalks which, if provided without enhancements such as curb extensions, median islands, and roadway illumination, may not improve safety. Other enhancements to consider include improved sight distance and better access management to reduce conflicts, as well as traffic calming to reduce speeds.



Pedestrian Refuges and Curb Extensions

Pedestrian refuges and islands allow students to use existing gaps in traffic to split the crossing of the roadway into manageable parts. This is especially important where there are multiple travel lanes in each direction. Without enhancements such as islands, these roadways may not offer good opportunities for crossing and may encourage students to dash across the roadway during less than adequate gaps. Median islands are one of the most effective ways to increase safety and make crossing easier.

The use of curb extensions (bulb-outs) can reduce crossing distances. These extensions also have the effect of increasing the visibility of the pedestrian. Where on-street parking is present, curb extensions should be considered.

Textured/Colored Crosswalks

ODOT's practice is to not install textured or colored crosswalks. It is sometimes, however, the desire of a local road authority to install them. Textured or colored crosswalks can actually be LESS visible than conventional marked crosswalks (red brick tends to fade to black, especially at times of low visibility).

Textured crosswalks can be rough, impeding the movement of pedestrians with wheelchairs and walkers. They can become uneven, presenting a tripping hazard to pedestrians, especially

the sight impaired. Textured and colored crosswalks are typically higher maintenance and some materials can become slick creating a slipping hazard. If textured crosswalks are used, they should be made of durable materials, such as stamped concrete, with minimal beveling. Colored crosswalks should avoid the use of standard traffic control colors.

All textured and/or colored crosswalks are required to have the standard transverse white lines or continental (longitudinal) white lines to ensure their visibility and recognition to motorists.

Bicycle Network Enhancements

Surrounding streets should be equipped with appropriate accommodations for students on bicycles and bicycle access should be available from all directions. Sidewalks, bikeways, and any trails should connect to the school property. Consider improving linkages between surrounding neighborhoods to provide access such as between cul-de-sacs and school property. Bicyclists should have secure and separate parking facilities close to school entrances.

Bikeways are divided into three classifications:

- Separated bikeways such as cycle tracks, raised bike lanes, and shared use paths which offer an element of physical separation between motorized vehicles and bicycles;
- On-road bikeways such as shoulders, bike lanes, and buffered bike lanes which are located on the same curb-to-curb portion of the roadway as motor vehicles; and,
- Shared lanes with slow speeds (25 mph or less) and low traffic volumes where bicyclists ride in the travel lane with motor vehicles and special attention is given to the needs of the bicyclists (sometimes referred to as a bicycle boulevard or neighborhood greenway).

Bicycle facilities need to be developed in a comprehensive manner to provide an uninterrupted network of comfortable routes to school. On state highways, the design of bicycle facilities should follow the standards established in the ODOT Highway Design Manual. Further guidance is available in ODOT's Bicycle and Pedestrian Design Guide as well as AASHTO's Guide for the Development of Bicycle Facilities and NACTO's Urban Bikeway Design Guide.

Traffic Calming Measures

Traffic calming measures are intended to encourage drivers to drive at appropriate speeds. The selection of traffic calming strategies must consider the operational goals for the roadway, adjacent land use, and emergency vehicle concerns.

Traffic calming on neighborhood streets involves different considerations than arterial streets and state highways. Treatments on neighborhood streets may include:

- speed humps,
- traffic circles or diverters,
- raised crosswalks,
- narrower street and intersection widths, and
- other geometric features or traffic control that may be aimed at reducing the speed and/or volume of traffic.

On arterials and state highways, traffic calming treatments typically need to be more accommodating of larger vehicles, higher speeds, and higher volumes. Changes to the

roadway environment can be used to reduce speeding and cue drivers to a mixed use environment of pedestrians, bicycles and transit, such as:

- wider sidewalks,
- streetscaping,
- median islands,
- pedestrian-scaled amenities, and,
- roadway lane reconfiguring (such as a 4 lane to 3 lane “road diet” conversion)

Some devices, common to both, also help reduce crossing distance, such as:

- pedestrian refuges,
- curb extensions, and
- roundabouts.

See ODOT’s [Main Street Handbook](#) or AASHTO’s Guide for the Planning, Design and Operation of Pedestrian Facilities for more information.

Site Layout and Parking

Site layout and parking should be focused on reducing pedestrian, bicycle, and motor vehicles conflicts. A problem at many schools is the growing activity of parent pick-up and drop-off. When possible, consideration should be given to separating bus and parent drop-off/pick-up points. Redesign of parking areas to improve flow and reduce pedestrian-vehicles conflicts should be considered. School officials should work closely with Public Works (Traffic Engineering) representatives to evaluate traffic safety issues with site layout and parking.

According to California’s Safe Routes to School program, more children are hit by cars near school than at any other location. To help change this pattern, their program recommends some low-cost and easy-to-implement measures that schools, parents, and local governments can undertake. View their one-page document [Improving School Drop-Off and Pick-Up Zones](#).

Morning traffic operations on a school campus usually operate safely and efficiently due to parent traffic arriving at a broader range of times. Afternoon traffic operations, however, are quite different because most often parents arrive well before the school dismissal and park or queue (back up) along the campus driveway. The afternoon queue often results with vehicles stopped in the roadway or along the shoulder of a major through route, which increase the chances of collisions and similar traffic-related safety concerns.

SECTION VI – ACTIVITY ELEMENTS

Encouragement Programs

The NHTSA Safe Routes to school Toolkit recommends that schools encourage more bicycling by teaching bicycle safety, offering bicycle repair classes, and providing adequate bicycle parking facilities that shield bikes from inclement weather and that guard against theft.

Adults should lead by example. In communities where the bicycle is more accepted and used extensively by adults for short trips, there will be higher levels of children bicycling to schools.

Walking or Biking School Bus

The walking (or biking) school bus has become increasingly popular in recent years. A walking school bus provides children with a safe and healthy mode of transportation to school. The children walk to school in a group along a set route with adult supervision. Each 'bus' (group of students) walks (or bikes) along a set route with at least one adult 'driver' in front and an adult 'conductor' bringing up the rear.



Educational Programs

Educational programs are needed to supplement the engineering and enforcement efforts to effectively promote school area safety. In Safe Routes to School (SRTS) programs, education links classroom activities and academic achievement to the creation of a safe routes plan to effectively provide a youth-generated perspective, and provides a venue to teach motorists, pedestrians, and bicyclists about their responsibilities and about traffic rules. A number of materials and programs are in existence. These programs include school curriculum, banners, reader boards, internet resources, work with local media and neighborhoods, and special events and promotions, such as Oregon's [Walk and Bike to School Day](#). These efforts should be continuous throughout the year, but especially strong at the beginning of the year.

An important consideration in developing effective educational programs is recognition that child pedestrians perceive and react to traffic situations in predictable but different ways from adults. The rules regarding pedestrian safety were made by adults primarily for adults and may not be obvious to children. A pedestrian safety video that sheds light on these differences is [Children in Traffic](#). This video is available from ODOT's Transportation Safety Section (1-800-922-2022). The video presents traffic situations from the child's point of view and as related to developmental limitations. Educators and traffic safety advocates can use this information to formulate more effective safety measures at school. Some of the key points are:

- Children mix fantasy and reality. They may see cars as living creatures with eyes, nose and mouth. They can easily misinterpret drivers' intentions.
- Because of their size, children have difficulty seeing and being seen by others. They assume if they see a car, the driver sees them.
- They have a one-third narrower field of vision than adults. They will see an approaching car later than an adult would under the same circumstances.
- They cannot easily pick out the direction of various sounds. They may focus only on the sound that interests them the most.
- Younger children have little or no sense of danger. They generally develop awareness that vehicles can cause serious injury between the ages of six and eight.
- They have not fully developed their motion sensitivity, i.e., they cannot judge speed and distance. They cannot tell whether a car is standing or moving, or which of two moving cars is moving faster.
- Children don't understand complicated traffic situations. For example, they may assume that, because one car slows down to stop at an intersection, cars in other lanes will do the same.
- They tend to focus on things of immediate interest and react spontaneously. For example, they may chase a ball that rolls into the street, ignoring traffic around them.
- Children have abundant energy. Their eagerness to be in motion overrides their awareness of traffic. They may be in a hurry to get home or to get to school and forget safety rules.
- They learn by example and may imitate bad examples of adults or older children in traffic.
- Children may take risks because they overestimate their ability, knowledge, and strength.

It's important to identify and utilize public and private service providers best suited to implement an effective school traffic safety education program. Pedestrian and bicycle advocacy groups, transit providers, school bus service providers, local transportation

authorities or public works departments, state agencies, neighborhood and business associations, public health advocates, county health departments, and injury prevention professionals – these groups often have education and outreach materials and/or personnel available.

Enforcement Programs

Enforcement enlists the help of local law enforcement to focus efforts in problem areas and increase community awareness of school safety issues. Police departments recognize traffic safety as a major concern of the public they serve. They also acknowledge the interrelationship of school safety, crime prevention, crime resolution, traffic safety, and traffic enforcement.

Law enforcement can take a leading role in improving public awareness of existing traffic laws (e.g. stopping for pedestrians in marked crosswalks, not speeding in school areas, obeying parking controls, and stopping for school buses). Some law enforcement agencies have instituted school safety awareness programs and have a strong presence in the school they serve. Others have provided targeted “stings” at strategic locations to catch violators during peak school travel times of morning arrival and afternoon departure. Also, recent advances in automated enforcement such as photo radar (See ORS 810.438) are becoming effective traffic enforcement tools. In combination with engineering improvements and education programs, the enforcement program can be particularly effective.

Possible traffic safety problems where enforcement is part of the solution include the following:

- Speeding in school speed zone
- Illegal passing of school bus
- Not yielding to pedestrians in a crosswalk
- Parking violations – bus zone, crosswalks, residential driveways, time zones
- Risks to pedestrians and bicyclists during drop-off and pick-up times
- Unsafe pedestrian and bicycle practices
- Other traffic law violations in school zone
- Crisis management / incident response

Oregon Safe Routes to School practitioners advise schools to design a communication process that encourages students and parents to notify the school and police of the occurrence of a crash or near-miss during school commute trips involving auto, bus, pedestrian, or bicycle transportation. Include your local transportation authority or Public Works department in this reporting system to help produce more valuable data and raise awareness.

Enlist the help of law enforcement with the following traffic safety activities:

- Enforcement of traffic laws and parking controls through citations and warnings

- Enforcement of Oregon's school zone laws
- Targeted enforcement of problem areas – an intensive, focused effort during the first two weeks of school and a strategy for the rest of the year
- Participation in School Safety Committees and Safe Routes to School task forces to help identify safety problems and solutions.

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SECTION VII - SCHOOL ZONE SAFETY RESOURCES

National Resources

The University of North Carolina Highway Safety Research Center (HSRC) has established a clearinghouse for the [National Safe Routes to School \(SRTS\) Program](#). It is a centralized resource of information on successful Safe Routes to School (SRTS) programs and strategies. Users of this site will find information on how to start and sustain a Safe Routes to School program, case studies of successful programs as well as many other resources for training and technical assistance. The HSRC is also responsible for developing educational programs on SRTS, as well as developing and maintaining a listserv, and toll-free phone number.

- **Safe Routes to School Plans** are described in the FHWA Safety Division's "[SRTS Program Guidance](#)".
- A national **Safe Routes to School Toolkit** is available from the National Highway Traffic Safety Administration (NHTSA) titled [Safe Routes to School](#). It is a complete guide and handbook for initiating and implementing a Safe Routes to School program and is based on the successful national model created in Marin County, California. NHTSA also provides information related to **school bus safety** on their [website](#).
- The Institute of Transportation Engineers (ITE) as prepared a variety of [Briefing Sheets](#) on matters related to school area safety, walking and bicycling audits, school site design, and traffic calming.
- The USA web site for [Walk to School](#) offers resources for attracting wide support and momentum for your Safe Routes to School Program along with some fun.
- [America Walks](#) is a national coalition of local advocacy groups dedicated to promoting walkable communities. The organization works to foster the development of community-based pedestrian advocacy groups, to educate the public about the benefits of walking, and to act as a collective voice for walking advocates. America Walks offers [advice](#) about how to get started and how to work effectively with public officials and engineering and design professionals.
- The [Pedestrian and Bicycle Information Center \(PBIC\)](#) is a clearinghouse for information about health and safety, engineering, advocacy, education, enforcement, and access and mobility. The PBIC serves anyone interested in pedestrian and bicycle issues, including planners, engineers, private citizens, advocates, educators, police enforcement and the health community. PBIC supports a [walking-specific website](#), a [bicycling-specific website](#), and a [repository for digital image files](#). PBIC also supports the following websites related to safe routes to school activities: <http://www.saferoutesinfo.org/>, <http://www.walktoschool.org/>, and <http://www.iwalktoschool.org/>.
- The **Institute for Transportation Research and Education (ITRE) at North Carolina State University** provides information on best practices for managing school campus traffic. Their [website](#) includes a Carpool (Pick-up and Drop-off Area) Decision Tree, a web-

based support tool to be used by school staff to analyze and find recommendations on ways to improve school-related traffic.

- The [Texas Transportation Institute](#) has school site planning guidelines available. See [Traffic Operations and Safety at Schools Recommended Guideline](#) (FHWA/TX-04/4286-2).

Oregon Resources

- [Oregon's Safe Routes to School Program](#) provides information related to creating school safety action plans, school newsletter ideas, examples of implementations of the 5E's, and links to numerous safety brochures, posters, and videos.
- ODOT's Transportation Safety Section has a **Media Catalog** that lists all of the films and videos they have available for loan on a wide range of topics including pedestrian safety. One of the highly recommended videos is **Children in Traffic**. Call 1-800-922-2022 for a copy of the catalog or to speak to the Pedestrian Safety Program Manager. Another excellent resource is the [Community Traffic Safety Resource Guide](#).
- Also available from ODOT is the [Oregon Bicycle and Pedestrian Design Guide](#) which provides guidance for improving pedestrian and bicycle safety. Contact the ODOT Bicycle and Pedestrian Facility Design Specialist at (503) 986-3554 for questions related to this guide.
- The **Bicycle Transportation Alliance** (BTA) runs a statewide bicycle safety education program that teaches youth grades 4th to 7th bicycle safety in a 10-hour comprehensive curriculum. The program includes training where students learn traffic rules and ride bicycles on the street. The BTA brings resources such as bicycles, helmets, and [curriculum](#), and will train teachers. The program is funded by the Oregon Department of Transportation. More information is available at the program [website](#).
- The [Oregon Walk + Bike Network](#) coordinates the Walk+Bike Challenge Month (May) and the Walk+Bike to School Day (early October). The program offers a package of incentive giveaways, promotional flyers, and media materials for participating schools. The program hosts low-cost training workshops for school coordinators, a monthly information and resource sharing conference call, a listserv, and they publish a quarterly newsletter related to walking and biking to school.
- The **Oregon Safe Kids Coalition** is part of the national Safe Kids Campaign. The [Oregon Safe Kids Coalition](#) is sponsored by the Department of Health Services. Publications and videos related to helmet fitting and pedestrian safety are available on the program website.
- The Oregon Health Sciences University [Think First](#) Program provides 30-90 minute school presentations with information on basic brain and spinal cord anatomy and making smart choices while traveling and recreating. The program also offers low-cost helmets upon request. Contact Kayt Zundel, Program Director at (503)494-5353.

Local Programs Around Oregon

Clackamas County

Clackamas County launched a safe routes program in 2003 to improve routes to local area schools. The County works with schools in the County to improve the safety of key routes to schools ranging from simple tasks such as roadside vegetation maintenance to school flashers and crosswalks. The Clackamas County Sheriff's Office also is a strong player in helping with enforcement around the school zones. For more information, contact the County Traffic Engineer, Joseph Marek, at (503) 353-4705.

Tillamook County

The Tillamook County Traffic Safety Commission used a Community Small Projects mini-grant to install time-activated flashing lights on "SCHOOL ZONE AHEAD" signs at a school located directly on Highway Route 101. The lights flash only during times when students are coming to or leaving school. This project required coordination with ODOT, PUD, the School District and the County Road Department.

Washington County

[Washington County](#) uses a comprehensive approach to school area safety including reader boards, targeted enforcement, crossing guard training, engineering approaches including enhanced signing, flashing lights and traffic calming, mapping safe routes to school, and consulting to schools in solving specific safety problems. In September 2013, Washington County was awarded a \$150,000 non-infrastructure grant from the Oregon Safe Routes to School Program to fund a SRTS coordinator for three years. This coordinator will help boost the number of SRTS programs and activities throughout the county while building valuable SRTS partnerships among city and county agencies, schools, community organizations, and neighborhoods.

City of Ashland

Ashland has used a variety of strategies to increase bicycle and pedestrian safety. Public awareness and education are ongoing through a **Look Out for Each Other** campaign, banners, brochures and a crosswalk awareness week. They have used **Safety Chicken**, an adult in a giant chicken costume, to promote walking and biking safety to the students. Engineering improvements include pole-mounted active speed zone signs which are circulated through the school districts, providing materials for the KEEP KIDS ALIVE, DRIVE 25 campaign, and applying different crosswalk treatments where greater visibility is needed.

Eugene & Springfield Area

School districts in Lane County support an active [Safe Routes to School program](#). As this is an urban area with multiple school districts, a [regional SRTS plan](#) was developed in 2012. The Lane Transit district has created [walking route maps](#) for many of the schools in the area.

City of Bend

Information related to Safe Routes to School in the Bend area is available through the [Bend Commute Options Program](#).

City of Milwaukie

Milwaukie has developed a number of approaches to pedestrian safety. As part of their school trip safety program, they have used speed humps and a neighborhood speed watch program that includes banners, radar feedback trailer, advisory letters to speeders and the media to slow drivers down in neighborhoods. Contact City Engineering at (503) 786-7600.

City of Portland

The City of Portland implemented a [safe routes program](#) in 2003 as part of its Community and School Traffic Safety Partnership. It developed a SRTS website that illustrates how to use map-based technologies to deliver SRTS services. Information is also available related to [“Walking School Buses”](#) and [“Bicycle Trains”](#).

Other Resources

The [Safe Routes to School program](#) of the **Washington State Department of Transportation** offers a how-to guide for developing school walk and bike route plans. Additional resources and information related to safety education is available from the [Washington Safe Routes to School Coalition](#).

The New Jersey Department of Transportation provides extensive guidance on best practices for school zone design in their [New Jersey School Zone Design Guide](#).

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ACKNOWLEDGEMENTS

This Guide was originally produced in cooperation with the Alliance for Community Traffic Safety in Oregon (ACTS Oregon) and a School Zone Subcommittee (from the Oregon Traffic Control Devices Committee). The School Zone subcommittee was initiated to review and recommend changes in school zone rules, policies and statutes. Thanks to those individuals and organizations that made significant contributions to this document.

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To Be Updated

Guide for School Area Safety
Summary Revision List
Revision 1, January 16, 2015

Page / Paragraph	Revision
page ii / paragraph 2	<ul style="list-style-type: none"> Added sentence stating that this guide does not establish policy or standards.
page 1 / paragraph 4	<ul style="list-style-type: none"> Added paragraph regarding responsibility of engineer for traffic control devices.
page 2 / paragraph 2	<ul style="list-style-type: none"> Revised statement regarding examples of where school zones may not be appropriate.
page 3 / paragraph 1	<ul style="list-style-type: none"> Added sentence explaining that school speed zones are established by the road authority.
page 6 / all	<ul style="list-style-type: none"> Entire section rewritten to reflect current Safe Route to School programs and resources.
page 8 / paragraph 2 page 8/ paragraph 4	<ul style="list-style-type: none"> Revised statement to reflect MUTCD requirement that the downstream end of a school speed zone needs to be marked with a END SCHOOL SPEED LIMIT sign or an END SCHOOL ZONE sign. Revised statement to acknowledge consideration of students who <i>might regularly</i> walk or bike to school as a factor for providing a school speed zone.
page 9 / paragraph 3	<ul style="list-style-type: none"> Added <i>publicly funded early childhood education program</i> to list of locations where school speed zones may be established but where further justification is needed. Reflects recent change in ORS to include early childhood education programs as meeting the definition of “school” contained in ORS 801.462.
page 10 / paragraph 2 & 3	<ul style="list-style-type: none"> Multiple revisions to improve clarity of language related to school speed zones on high speed roads.
page 12 / paragraph 2	<ul style="list-style-type: none"> Revised language related to use of fluorescent yellow-green (FYG) sign sheeting for school zones. New language reflects 2009 MUTCD requirement to use FYG for new school zone signing.
page 12 / paragraph 3-6	<ul style="list-style-type: none"> Revised text and images to reflect the three distinct uses for the school sign, i.e., as a

	school warning sign, as a school crosswalk warning sign, and as an advanced school crosswalk warning sign.
page 13 / paragraph	<ul style="list-style-type: none"> Revised text to state that flashing lights are generally more effective (than the alternatives) at slowing vehicles in a school speed zone.
page 14 / paragraph 3	<ul style="list-style-type: none"> Revised text to state that SCHOOL REDUCED SPEED ZONE AHEAD sign should be used (rather than “may”) when the posted speed is 35 mph or higher. Follows current MUTCD.
page 15 / paragraph 5 & 6	<ul style="list-style-type: none"> Revised text to emphasize the effectiveness of In-Street Pedestrian Crossing signs when used appropriately.
page 16 / paragraph 1	<ul style="list-style-type: none"> Included ODOT policy regarding limited/restricted use of yellow diamonds
page 16 / paragraph 3	<ul style="list-style-type: none"> Added guidance related to setting the periods for flashing beacons
page 16 / paragraph 5	<ul style="list-style-type: none"> Updated cost estimates for flashing beacons
page 16 / paragraph 7	<ul style="list-style-type: none"> Added suggestion that RRFB’s should be located at least 200 feet from school speed zone flasher. Previous guide did not address this issue.
Page 17 / paragraph 3	<ul style="list-style-type: none"> Revised language to encourage the use of continental crosswalk marking style at uncontrolled crosswalks, rather than at school crosswalks. Removed language that suggested that school crosswalks (controlled or uncontrolled) could be distinguished from other crosswalks by utilizing the continental style marking.
Page 17 / paragraph 6	<ul style="list-style-type: none"> Added language to clarify that advance stop bars should be used on approaches with more than one lane, <i>including turn lanes</i>.
Page 28 - 31	<ul style="list-style-type: none"> Added and removed resource listings. Updated links.

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