

School Zone Signing: *A Case Study of the Issaquah School District, King County, WA* Dariel Norris

“You uncover what is when you get rid of what isn’t.” Buckminster Fuller

Abstract: As I traveled through the Issaquah School District in Washington State, transporting my children to athletic events at the various schools, I noticed a number of changes taking place in the signs used in school areas. It seemed the number of signs was increasing and the messages weren’t consistent. There were lots of new signs with brighter colors. Many signs conveyed the same message while other signs used different messages in similar places. On the street adjacent to Issaquah High School, there was a new intimidating photo enforcement apparatus that was recently installed. I was also aware that recent changes in Washington State law provided for “double fines” in school zones.

With the changes in sign activity around the schools and new enforcement laws, I became acutely aware that as an average driver I didn’t know why the sign applications were often different. I also experienced many distractions in school zones with children, parents, buses and pedestrians making it difficult for me to take in all the signs while being alert to the possible hazards around me. I started looking closer, asking questions and doing research. What I found, my deductions, and recommendations as an ordinary driver is what is summarized in this paper.

Introduction: In recent years, the Issaquah School District has experienced extensive residential development leading to the incorporation of new cities and construction of new schools. The result is schools district that overlays six different jurisdictions, all that appear to have different signage policies for their respective school zones. Yet, even in the same jurisdiction, there were different sign applications. The cities of Issaquah, Bellevue, Newcastle, Renton, Sammamish, and King County host 24 different schools of the Issaquah School District.

After my initial discovery, I began the research by viewing school zone signs in various jurisdictions within the Issaquah School District. During this process, I realized an understanding of the laws and guidelines for school zone signs would be necessary. With this as a background, I developed the following outline for my research to include:

- Defining the terms:
 - School Zone
 - Uniform
- Guidelines for sign applications as presented in the Manual on Uniform Traffic Control Devices (MUTCD): 2003 & 2009
- Application of School Zone signs in the Issaquah School District
- Importance of Communication
- My conclusions
- My recommendations

This paper is not intended as a thorough engineering evaluation of the subject matter but rather a summary of the observations of an average driver trying to safely navigate a 3000 pound machine in the ever changing environment of the school area.

Defining the Terms

As I study the literature, I was challenged by the meaning of two terms that continually appeared in the discussion: school zone and uniform. Obviously, we all have our own ideas of what these terms should mean but what in the application of school zone signs, do they actually mean.

School Zone

In Washington State, there are three governing documents which provide a definition of "school zone". They are the United States Code, the Washington Administrative Code (WAC) in conjunction with the Revised Code of Washington (RCW), and of course the MUTCD.

The US Code defines a school zone as "in or on the ground of, a public, parochial or private school; or within a distance of 1,000 feet from the ground of a public, parochial or private school"ⁱ. The Washington State Administrative Code (WAC) states "...the reduced school or playground **speed zone** shall extend "300 feet in either direction from the marked cross walk when the marked crosswalk is fully posted with standard school speed limit signs or standard playground speed limit signs"ⁱⁱ *Note: this is a definition of "school speed zone"*.

The MUTCD defines a "**school zone**" as "a designated roadway segment approaching, adjacent to, and beyond school buildings or grounds, or along which school related activities occur"ⁱⁱⁱ. The 2009 MUTCD provides further definition of a "**school**" as "a public or private educational institution recognized by the state education authority for one or more grades K through 12 or as otherwise defined by the State."^{iv}

From these two sources, there are two different definitions for the same word phrase "school zone". The US Code appears to define a circle of safety based on the grounds of the school, with the WAC and MUTCD referring to "a designated roadway" The latter is more open ended by using the word "beyond" leaving room for application of "school zone" signs well beyond what may have been intended. Throughout this paper, I will refer to the school zone as the school speed zone to differentiate that we are talking about traffic speed rather than a circle of safety as is implied by the US Code.

Uniform

The definition of uniform was obtained from the MUTCD and of course the dictionary^v. The dictionary defines "uniform" as follows:

u-ni-form: adjective 1. Identical or consistent, as from example to example, place to place, or moment to moment: *uniform spelling; a uniform building code.* 2. **without variations in detail:** *uniform output; a uniform surface.* 3. **Constant; unvarying; undeviating:** *uniform kindness; uniform velocity.*

The MUTCD is recognized as the national standard governing all traffic control devices. The Manual states “The MUTCD plays a critical role in improving safety and mobility of all road users” and that “Uniformity of traffic control devices is critical in highway safety and mobility”. However, according to the MUTCD, “Uniformity means treating similar situations in similar ways”^{vi}. The Manual goes on to state, “The process encourages innovation and flexibility while maintaining uniformity”^{vii}.

There appears to be a dichotomy when I look at the definition of the word “uniform” in the dictionary and compare it to the MUTCD definition. The dictionary states uniform means “identical” whereas the MUTCD indicates it means “similar”. As a user of the system, trying to recognize the message and provide an appropriate response within a limited amount of time in an environment with many distractions, the difference between identical and similar is very significant.

It should be clear to a driver at what point they enter or leave a “School Zone” along with the expected driver response.

The Manual of Uniform Control Traffic Devices - Communication

As stated above, the MUTCD is recognized as the national standard governing all traffic control devices. The Manual should provide clear direction to agencies on required sign types, legends and locations. However, we find confusion in both sign types and application. Some of the confusion may result from the fact that we are at a time when two editions of the MUTCD are in use. The 2003 edition is the current version with deadlines for compliance. It is quite possible that the changes in school zone signing, I initially observed, were changes required by the 2003 MUTCD with a January 17, 2011 compliance deadline. The 2009 edition is currently under review by the various states with many agencies already implementing the 2009 directives.

For example, the 2003 MUTCD has 22 different^{viii} signs relating to school zones that can be used alone or in combinations. The 2009 MUTCD^{ix} identifies 26 different signs that may be used in the school area. Note the reference is now “school area” rather than “school zone”. The result is before the motoring public can assimilate the 2003 MUTCD, the 2009 edition has already identified changes. In addition to the changes between the two editions of the MUTCD, a clear definition of the meaning of an individual sign is missing. Let’s look at sign S1-1:

In the 2009 Manual, this single sign has four different applications: 1) school area; 2) school zone; 3) school advance crossing warning; and 4) school crossing sign. In the 2003 Manual, the S1-1 has two applications: 1) school advance crossing warning, and 2) school crosswalk sign.



Without additional information the driver may be confused; there is one sign with four alternative applications in multiple situations. There is an assumption that the driver can conclude it has to do with a school related activity. The driver will then need to determine the conditions and take appropriate action much of which is dictated by the supplemental signs that may be attached to the S1-1. Because this sign may be used

in conjunction with any combination of additional signs, what was simple just became complicated, leaving room for debate as to whether the school zone signs are “uniform” by the dictionary definition.



Sign S4-5a indicates that there is a “SCHOOL ZONE AHEAD”. This sign appears to be used significantly less than what I would consider its counterpart, S5-2 “END SCHOOL ZONE”. In my search, I was unable to find a single application of this sign S4-5a. The use of “SCHOOL ZONE AHEAD” with “END SCHOOL ZONE” would make sense, however the sign is not used causing myself and others to question “When did I come into the school zone?” The S1-1 appears to be used liberally as an advance school crossing sign and school crossing assembly indicating there will be children crossing but doesn’t say to the driver, “*YOU are entering a school zone!*”

In regards to the S5-2, “END SCHOOL ZONE”, the MUTCD allows for variations. The 2003 Manual allowed the S5-2 or simply a speed limit sign to delineate the end of the school zone. Again, how does the motorist know the posted speed sign delineates the end of the school zone?



The School Speed Limit Assembly, R2-1, offers a new set of issues for the driver to deal with in terms of the supplemental plaques which include S4-1P “HOURS OF SCHOOL OPERATION”; S4-2P “WHEN CHILDREN ARE PRESENT”; S4-4P “WHEN FLASHING”; and S4-6P “Mon – Fri”.

School Sign Applications - Issaquah School District; King County, Washington

The purpose of this discussion is to illustrate the variation in the application of school signing across a single school district albeit a district that includes six separate jurisdictions. The Issaquah School District may be distinct, in that regard, as most school districts lie within a single municipality.

Issaquah High School, Issaquah, WA.



The City of Issaquah installed a School Speed Limit Assembly^x on the north and south ends of Second Avenue SE as it approaches the high school. The sign assembly conveys five individual messages including “SCHOOL”; 20 mph Speed Limit “WHEN SCHOOL IS IN SESSION”; “PHOTO ENFORCED”; and 7 AM to 4 PM. This was the only application of this sign assembly that I found throughout the school district.

The sign resulted from a study done in 2007 which evaluated traffic conditions on Second Avenue SE along the Issaquah High School frontage. In addition to serving the high school, Second Avenue SE provides direct access to the school district transportation center; three elementary schools; a skate park; and the Issaquah Community Center on this three quarter mile stretch of urban street. All of this to say there is a significant volume of pedestrian and large vehicle traffic which leads to potential safety concerns.

On March 10, 2009 the Issaquah City Council approved a request from the local Police Department to install speed enforcement cameras to “increase pedestrian and vehicle safety”^{xi} on Second Avenue SE. The Issaquah Police Department indicated the numbers of speed violations were approximately 110 per day prior to the photo enforcement program that started May 2009. By January 2010 the violations dropped to 40 per day. It is also worthy to note that this process of slowing traffic “does not drain the community enforcement resources”^{xii}. The numbers of speeding vehicles in the corridor climbed during the summer months taking most of September before numbers again dropped.

Skyline High School, Sammamish, WA

The crosswalk sign shown in the picture on the right does not indicate that this crossing is in a school zone yet the signalized intersection is the primary access to Skyline High School. The roadway adjacent to the school frontage is 228th Avenue SE, a 5 lane Principal Arterial, with sidewalks on both sides and a posted speed of 40 mph. I was unclear why this application didn't use the school cross walk sign (S1-1). I assumed it had something to do with the posted speed limit of 40 mph. This is the only school in the district I observed that had a posted speed limit of 40 mph on the adjacent street. Why is the driver not expected to travel at 20? The answer maybe, a signalized intersection and adjacent sidewalks along with the number of lanes for traffic flow. This is a deduction that most drivers are not going to make during their travel through this intersection. Approximately one mile south of Skyline High School, on the same arterial, my theory was proven wrong!



Discovery Elementary School, Sammamish, WA.

Discovery Elementary School is approximately one mile south of Skyline High School on the same arterial (228th Avenue SE) as shown in the picture on the left. Contrary to the Skyline High School situation, for travel along 228th Avenue SE, the driver is required to travel at 20 mph “WHEN LIGHTS ARE FLASHING” although 228th Avenue SE still provides sidewalks on both sides and posted speed limit of 40 mph as shown in the picture on the right.



Pine Lake Middle School / Sunny Hills Elementary School, Sammamish, WA.

Pine Lake Middle School also located on 228th Avenue SE approximately one half mile south of Discovery Elementary School. Again, the school zone signing has a 20 mph speed limit contrary to the Skyline High School application.

Another illustration of the variance in signs is illustrated by the school zone signs application for Pine Lake Middle School and Sunset Hills Elementary on the Issaquah Pine Lake Road. The schools are less than one block apart, and are within 1.5 miles of Skyline High School. Whereas the schools on 228th Avenue SE have school zone signs indicating a 20 mph speed limit “WHEN LIGHTS ARE FLASHING”, the school zone signs for the Issaquah Pine Lake Road, an intersecting street, indicate a 20 mph speed “WHEN CHILDREN ARE PRESENT”.



Liberty High School/ Briarwood Elementary School, Renton, WA:

168th Avenue SE provides access to Liberty High School. Briarwood Elementary is served by a road that intersects 168th Avenue SE approximately 600 feet north of Liberty High School. As shown in the picture on the left, an “END SCHOOL ZONE” sign with the “Speed Limit 30” appears prior to the access to the high school parking lot. Isn’t Liberty High school in a school zone? It appears that the sign is for the Briarwood Elementary School rather than Liberty High School. In



this case, there is no school zone signs for the high school but in the Issaquah High case there is posted school zone plus photo enforcement. I have shown three high schools with three different messages for the driver.



Newcastle Elementary School, Newcastle, WA.

The city of Newcastle and Newcastle Elementary School are both relatively new. Newcastle Elementary School is fronted by 136th Avenue SE/SE 88th Way. Approaching the school entrance from the south, as we look at the signs, the driver sees a “SPEED LIMIT 20 WHEN FLASHING” supported by two flashing beacons. Just beyond this post, before the street takes a curve, we see an additional sign with “SCHOOL SPEED LIMIT 20”,



and no other conditions listed leaving the driver to wonder “does this sign apply without the flashing light?” On the other side of 136th Avenue SE, the same street, I found a sign application that indicates “SPEED LIMIT 20 WHEN FLASHING OR WHEN CHILDREN ARE PRESENT”. At the “T” intersection with 135th Avenue SE, the sign approaching the school reads “SPEED LIMIT 20 AT ALL TIMES”. As a driver I am overwhelmed by the variation of signs and messages presented to the driver.

Community of Preston, King County, WA.

The next two signs are in unincorporated **King County** in the rural community of Preston. The nearest school is approximately 7 miles away. The only school activity in the area is a school bus stop around the corner on the left. There are no marked crosswalks, no sidewalk, and no school bus stop signs. Is this a school zone or even a school speed zone?



Here is a view of the same S1-1 sign looking from the opposite direction. There are 25 mph signs before, after, and in between the school signs negating the sign as notification of the bus stop or school related activity. In this case, the children walk on both sides of the street and most often in the middle because there is no walk way or shoulders with a pavement width of only 18 feet. This application begs a couple of questions. 1) Is there a better way to sign this? 2) Is the speed limit sign in compliance with the cross walk sign? 3) What kind of habits are being developed and reinforced for the driver? I believe the intent is to let drivers know that there is school activity in this area from the school bus. However, that is **not** one of the MUTCD uses of the S1-1 sign.



Importance of Good Communication

In the opinion of the Issaquah Police Department, “There is no such thing as “uniform” when it comes to the application of traffic control”^{xiii}. Before making a conclusion, I considered the definition of “uniform” and my observations. As I have observed the sign applications in the school speed zone, not only in the Issaquah School District but also in adjacent school districts, I did not find what I would consider uniform (“identical” or “consistent”) but instead many applications of multiple signs in a variety of conditions or in similar conditions. Therefore, it is left up to the driver to figure out what is required in any given situation while watching for children, other cars, cross walks and the unexpected. I am therefore, compelled to agree “there is no uniformity” in the application of school speed zone signs. Based on my observations there may be similarities but not uniformity.

“Procedures and devices that are not uniform might cause confusion among pedestrians and road users, prompt wrong decisions and contribute to crashes.”^{xiv}

Visual and Human Perceptions

A traffic engineer can “glance” at a road or intersection with a familiarity of traffic signs and roadway design that allows for an instinctive response. Not so for the average driver! The engineer knows the intent while the driver needs to decode that which is encoded, synthesize the information, and respond appropriately while taking in plethora of sign information.

To emphasize the point, please consider the following letter to the Editor: ^{xv}

“I am confused by the school zone signs. Some signs say 20 mph when lights are blinking or when children are present. If the lights are not blinking how do you know that children are present? In Idaho I saw times posted on the school zone signs so I knew that between these hours the speed zone was enforced. With activities scheduled before and after school it is difficult to assume when or not children are present. I have found quite a variety in school zone signs. Sometimes you enter a school zone and then there is no sign telling you that there is an end of school zone or speed limit sign. If you want to stay within the speed limit, and you always go 20 mph in school zones, many drivers are quite explicit in their annoyance with you. It would be nice if there was more uniformity between cities and county school signs for school zones.”

The article goes on to quote staff from the Washington Traffic Safety Commission stating that “school zones themselves are 600 feet in length — 300 feet in each direction from the crosswalk.” While this statement is accurate, it omits “when such crosswalk is fully posted with standard school speed limit signs or standard playground speed limit signs.”^{xvi} Taking this statement into consideration one must also realize that it is 300 feet each direction from each crosswalk therefore, there can be an overlap when these crosswalks are in succession allowing for a longer than 600 foot school speed zone. See the photo on the right.



Is there *consistency* in the message given? In this driver’s opinion the answer is NO! There appears to be two different scenarios: One, like that in the City of Sammamish, where each school has a different requirement for the application of a 20 mph speed limit, even when the environment is relatively the same. The other is like the Newcastle case, where the message changes on each street approaching the school. In both cases, the message becomes clouded causing confusion for the driver. In addition increased confusion comes when the use of “LIGHTS FLASHING” or “WHEN CHILDREN ARE PRESENT” is posted which was found frequently

As I have observed implementation of sign S1-1, I found it is used liberally to indicate children are walking on the roadway or vicinity often with a posted speed limit that is not that of a school speed zone. I think the lack of consistency clouds clarity therefore compromising compliance and ultimately the goal of safety. “Safety” is again a word that is liberally used yet difficult to define. A dictionary definition of *safe: free from hurt, injury, danger, or risk. to arrive safe and sound.* The goal while honorable may be difficult to accomplish because it is complicated when considering human behavior. More signs just cloud the issue adding to poor communication, making uniformity a key to understanding what is expected of the driver.

It seems to me that safety in the arena of schools is of importance especially when states are making an effort to enact new tougher laws for the sake of pedestrian safety. Old signs have been replaced with the newest and brightest accompanied with lots of studies and reports.

The ITE National Convention in April 2011 had a theme of “MOVING TOWARD ZERO”. This is an honorable goal but one that cannot be attained unless everyone understands the goal and shares in its success on the roads. In other words, we all need to be on the same page. Communities need to take ownership as well as traffic engineers, law enforcement, our judicial system and the driver.



As I was researching for this paper I found myself on what appeared to be a discussion web page for application of signs per the MUTCD^{xvii}. Between January 1 and March 1, 2011, there were 49 posts on the application of “school zone” signs. I can’t help but ask how is it that the professionals can’t agree? But even more disconcerting is that they don’t know or are unclear on the application of the “school zone” signs. Yet, there is the expectation that “citizen driver” should understand and comply!

Conclusions

In general, it is apparent that everyone is not on the same page. Engineers are confused about appropriate signage, the driver is not aware of all the new laws and there exist sign applications leading to a lack of common understanding of traffic laws within school zones. My observations concluded the following:

- The school zone and the school speed zone are assumed to be the same however legal definitions are not the same.
- Jurisdictions do not use the same guide lines for determining how they sign around a school nor do they treat all schools the same. High schools are, in general, not treated as a school speed zone area, regardless of state laws that treat all schools, preschool to 12th grade the same.
- State traffic legislation often does not include citizen education but does include stronger punitive consequences.
- Sign proliferation with conflicting information is common.
- Driver perception and subsequent decoding of the visual message does not appear to be part of the equation when implementing signs.

Recommendations

Personally, I like things simple. As a result here are some of my recommendations:

- First and foremost keep the message simple.
- Make a concerted effort to educate drivers. States should consider informational campaigns with literature communicating to the driving public updates of local laws possible through informational media i.e. local TV and radio as well as local internet. Frequent and open conversations help alleviate confusion.
- Local entities need to communicate with one another. In the case of Issaquah School District joint meetings of the school transportation department, jurisdictional engineering staffs and local law enforcement could help all to get on the same page
- Why not sign the “School Speed Zones” 20 mph, 24 hours a day, seven days a week? If we consider that many schools are used daily outside of the 7am-4pm period, for outside sports groups, community events and during highly emotional evening sporting events, it seems reasonable to expect the same operating

conditions in these situations of high use as well as during school hours. I recognize that states may have different speeds in the school speed zone; I am not suggesting they change the limit but I am saying whatever the school speed zone for any state make the expectation of drivers consistent with application that is uniform whenever a vehicle is in the “zone” of a school.



As we enter the era of eliminating traffic crashes and fatalities, let’s work together to provide the motoring public with a consistent, understandable message of the laws of the road giving the community the tools to be a winner.

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ⁱThe United States Code chapter 44>§ 921:25:

ⁱⁱWashington Administrative Code (WAC) Section 468-95-330.

ⁱⁱⁱ2009 Manual on Uniform Traffic Control Devices (MUTCD) Sect. 1A.13, pg 19 #185

^{iv} Manual on Uniform Traffic Control Devices Sect. 1A .13 pg 19 #184

^v Dictionary.com

^{vi} 2009 MUTCD 1A.06

^{vii}MUTCD

^{viii}MUTCD 2003 pg 7B-4

^{ix}2009 MUTCD pg 735

^x Commander Scott Behrbaum Issaquah Police Dept. phone conversation, January 2011

^{xi} <http://www.ci.issaquah.wa.us/News.asp>? Weekly update for 3/10/2009

^{xii} Commander Scott Behrbaum Issaquah Police Dept, phone conversation, January 2011

^{xiii} Commander Scott Behrbaum Issaquah Police Dept, phone conversation, January 2011

^{xiv} 2003 & 2009 7A.01 paragraph three MUTCD

^{xv} Everett Herald Monday January 10th 2011 article by Bill Sheets

^{xvi} Revised Code of Washington RCW 46.61.440.

^{xvii} The Department of Transportation Federal Highway Administration Office of Operations Knowledge Communities