



## CITY OF KIRKLAND

Department of Public Works

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[www.kirklandwa.gov](http://www.kirklandwa.gov)

### ENGINEERING STUDY EVALUATING SCHOOL ZONE SIGN PLACEMENT

At NE 80<sup>th</sup> Street from west of 132<sup>nd</sup> Ave NE to east of 126<sup>th</sup> Ave NE

Consolidated October 2024, City of Kirkland Public Works Transportation Division

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### **PURPOSE**

The purpose of this study is to document the engineering investigation and evaluation previously performed for the placement of school signs at/within the boundaries of the Rose Hill Elementary School Zone at NE 80<sup>th</sup> Street, which was required for the implementation of the School Zone Safety Camera Pilot Program in 2019.

In 2018, City of Kirkland Transportation Staff performed an engineering investigation to evaluate each elementary school zone within the City to identify any needed sign modifications required per the Manual on Uniform Traffic Control Devices<sup>1</sup> (MUTCD) 2009 Edition. When the City implemented the school zone safety camera pilot program in 2019 at the Rose Hill Elementary School, this provided an opportunity to adjust school zone signs. Automated enforcement traffic safety cameras have specific requirements for placement of equipment and accompanying school flashing beacons and signs. The placement of the traffic safety camera equipment was a joint decision between the City of Kirkland and the traffic safety camera vendor.

The specific purpose of this study is to document the placement of the school signs required for the implementation of school automated enforcement, and particularly the placement of the school flashing beacons.

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<sup>1</sup> MUTCD Link: <https://mutcd.fhwa.dot.gov/>

## **BACKGROUND DISCUSSION**

Located in Kirkland's South Rose Hill neighborhood, NE 80<sup>th</sup> Street is functionally classified as a collector with a default posted speed limit of 25 mph and a 2022 Annual Average Daily Traffic (AADT) of 3,665 west of 132<sup>nd</sup> Ave NE and 6,788 within the vicinity of 120<sup>th</sup> Ave NE. NE 80<sup>th</sup> Street provides access to/from low density residential, Lake Washington High School and Rose Hill Elementary School.

The Revised Code of Washington (RCW) Title 46.61.440<sup>2</sup> establishes a maximum speed limit of 20 mph (unless otherwise provided) within 300 feet of any marked school or playground crosswalk, when the crosswalk is fully posted with standard school or playground speed limit signs.

Per RCW 46.61.440 (1 and 2):

*(1) Subject to RCW 46.61.400(1), and except in those instances where a lower maximum lawful speed is provided by this chapter or otherwise, it shall be unlawful for the operator of any vehicle to operate the same at a speed in excess of twenty miles per hour when operating any vehicle upon a highway either inside or outside an incorporated city or town when passing any marked school or playground crosswalk when such marked crosswalk is fully posted with standard school speed limit signs or standard playground speed limit signs. The speed zone at the crosswalk shall extend three hundred feet in either direction from the marked crosswalk.*

*(2) A county or incorporated city or town may create a school or playground speed zone on a highway bordering a marked school or playground, in which zone it is unlawful for a person to operate a vehicle at a speed in excess of twenty miles per hour. The school or playground speed zone may extend three hundred feet from the border of the school or playground property; however, the speed zone may only include area consistent with active school or playground use.*

The Washington Administrative Code (WAC) Section 468-95-330<sup>3</sup> also contains requirements for the length of a school zone.

Per WAC 468-95-330:

*Pursuant to RCW 46.61.440, paragraph 07 in MUTCD Section 7B.15 is replaced with a Standard to read:*

*Applicable to state highways, county roads, or city streets, the reduced school or playground speed zone shall extend for 300 feet in either direction from the marked crosswalk when the marked crosswalk is fully posted with standard school speed limit signs or standard playground speed limit signs.*

*Applicable to county roads or city streets, the school or playground speed zone may extend up to 300 feet from the border of the school or playground property when fully posted with standard school speed limit signs or standard playground speed limit signs. However, the speed zone may only include the area consistent with active school or playground use.*

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<sup>2</sup> RCW 46.61.440 Maximum speed limit when passing school or playground crosswalks—Penalty, disposition of proceeds. Link: <https://app.leg.wa.gov/rcw/default.aspx?cite=46.61.440>

<sup>3</sup> WAC 468-95-330 School speed limit assembly (S4-1, S4-2, S4-3, S4-4, S5-1). Link: <https://app.leg.wa.gov/wac/default.aspx?cite=468-95-330>

*No school or playground speed zone may extend less than 300 feet from a marked school or playground crosswalk, but it may extend by traffic regulation beyond 300 feet based on a traffic and engineering investigation.*

*The speed limit signs shown in Figure 7B-5 shall be located per RCW 46.61.440.*

## **ENGINEERING STANDARDS**

Standards for school sign placement are shown in the MUTCD Part 7: Traffic Control for School Areas, except as amended by WAC 468-95-330. It includes standards for which signs shall be included at the school zone and speed zone boundary as well as recommendations for which optional signs may be placed. It should be noted that the MUTCD has evolved over the years, and the current version (11<sup>th</sup> Edition), of the document differs from the version referenced in WAC 468-95-330. Previous versions of the manual are available on the MUTCD website.

## **ROSE HILL ELEMENTARY SCHOOL ZONE AND SCHOOL SPEED ZONE BOUNDARY CONSIDERATIONS FOR SIGNAGE PLACEMENT**

When viewed from the westbound direction the Rose Hill Elementary school zone on NE 80<sup>th</sup> Street (shown in Figure 3) extends approximately 1,600 feet, from west of 132<sup>nd</sup> Ave NE to east of 126<sup>th</sup> Ave NE. The school zone includes a designated school crosswalk located at 130<sup>th</sup> Ave NE, about 20 feet west from school boundary.

The placement of the warning and regulatory signage that provides guidance to drivers traversing NE 80<sup>th</sup> Street within the vicinity Rose Hill Elementary school zone is consistent with Section 7.B.11, in the 2009 MUTCD. Below is a description of the school signage facing westbound traffic:

- **"SCHOOL ZONE" (S1-1)** sign, **"SCHOOL" (S4-3P)** and **"FINES HIGHER" (R2-6P)** plaques are located about 60 feet west of 132<sup>nd</sup> Ave NE. The purpose of these signs is to warn road users that they are approaching an area with school related activity.
- **"SCHOOL 20 MPH SPEED" (S4-5)** advance warning sign with supplemental **"PHOTO ENFORCED"** warning plaque located approximately 70 ft west of the **"SCHOOL ZONE" (S1-1)** sign and approximately 135 feet in advance of the school flashing beacon. The purpose of this sign is to warn road users that they are approaching the school/ crosswalk 20 mph speed zone.
- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole. Per MUTCD the **S5-1** sign assembly shall be placed at or as near as practical to the point where the reduced school speed limit begins.
- **"SCHOOL CROSSWALK" (S1-1)** signs and **"ARROW" (W16-7P)** plaques placed on each side of the designated school crosswalk at 130<sup>th</sup> Ave NE.
- **"BICYCLE /PEDESTRIAN CROSSWALK" (W11-15)** sign, **ARROW (W16-7P)** sign on each side of the crosswalk at 128<sup>th</sup> Ave NE and NE 80<sup>th</sup> Street.
- **"END OF SCHOOL ZONE" (S5-2)**, located about 270 feet east of 126<sup>th</sup> Ave NE, officially defines the end of the school zone in the westbound direction.

## School Flashing Beacon / Automated Camera Placement

The westbound school flashing beacon, shown on Figure 1, warns drivers that they are entering the 20mph school/crosswalk speed zone, which per WAC 468-95-330 must extend 300 feet in advance of the school crosswalk/school grounds. In this case, however, based on the engineering investigation and on engineering judgement, it was not deemed appropriate to place the school flashing beacon exactly at the required 300 feet since this would have resulted in the school flashing being placed at the intersection of NE 80<sup>th</sup> Street and 131<sup>st</sup> Place NE. Nor could the school flashing beacon be placed less than 300 feet (northwest corner of the intersection) in advance of the school crosswalk since this would have violated WAC 468-95-330, which states that *"No school or playground speed zone may extend less than 300 feet from a marked school or playground crosswalk but may extend by traffic regulation beyond 300 feet based on a traffic and engineering investigation"*. Thus, based on the above and on the additional factors described in more details below, it was deemed appropriate to place the school flashing beacon 390 feet from the school crosswalk.



**Figure 1. Westbound school zone flashing beacon located on NE 80<sup>th</sup> Street.**

- The traffic safety camera, per the vendor's requirements, must be placed between 30 and 75 feet from the school flashing beacon. The traffic safety camera needs to have readily access to power; therefore, proximity to an existing PSE pole is an important consideration. In this case, the best option for the camera placement was 30 feet from the school flashing beacon and in close proximity to an existing PSE (Puget Sound Energy) timber power pole.
- Since the school flashing beacon is solar powered, it is necessary to avoid/minimize the impacts of tree canopy to ensure proper operation. Thus, to meet the traffic safety camera placement requirements and to maximize solar exposure, it was determined that the best placement option for the school flashing beacon was 390 feet from the designated school crosswalk at 130<sup>th</sup> Ave NE / NE 80<sup>th</sup> Street.

When viewed from the eastbound direction the school zone along NE 80<sup>th</sup> Street extends approximately 1,600 feet, from east of 126<sup>th</sup> Ave NE to west of 132<sup>nd</sup> Ave NE. There is an uncontrolled marked crosswalk at NE 80<sup>th</sup> Street / 128<sup>th</sup> Ave NE, which was installed as a part of the neighborhood Greenways project. The intersection crosswalks feature solar-powered Rectangular Rapid Flashing Beacons (RRFBs) to assist people walking, rolling, and bicycling to cross NE 80<sup>th</sup> Street; however, the crosswalks themselves are not designated as fully delineated school crosswalks or speed zones.

The school signage facing eastbound traffic on NE 80<sup>th</sup> Street at/within the vicinity of the Rose Hill Elementary School is described below:



- **"SCHOOL ZONE" (S1-1)** sign, **"SCHOOL" (S4-3P)** and **"FINES HIGHER" (R2-6P)** plaques are located about 180 feet east of 126<sup>th</sup> Ave NE. The purpose of these signs is to warn road users that they are approaching an area with school related activity.
- **"SCHOOL 20 MPH SPEED" (S4-5)** advance warning sign with supplemental **"PHOTO ENFORCED"** warning plaque located approximately 100 ft east of the **"SCHOOL ZONE" (S1-1)** sign and approximately 135 feet in advance of the school flashing beacon. The purpose of this sign assembly is to warn road users that they are approaching the school 20 mph speed zone.
- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole. Per MUTCD the **S5-1** sign assembly shall be placed at or as near as practical to the point where the reduced school speed limit begins.
- **"BICYCLE / PEDESTRIAN CROSSWALK" (W11-15)** sign, **ARROW (W16-7P)** sign on each side of the crosswalk at 128<sup>th</sup> Ave NE and NE 80<sup>th</sup> Street.
- **"END OF SCHOOL ZONE" (S5-2)**, located 180 feet west of 132<sup>nd</sup> Ave NE Ave NE, officially defines the end of the school zone in the westbound direction.



**Figure 2. Eastbound school zone flashing beacon on NE 80th Street.**

grounds boundary.



#### **School Flashing Beacon / Automated Camera Placement**

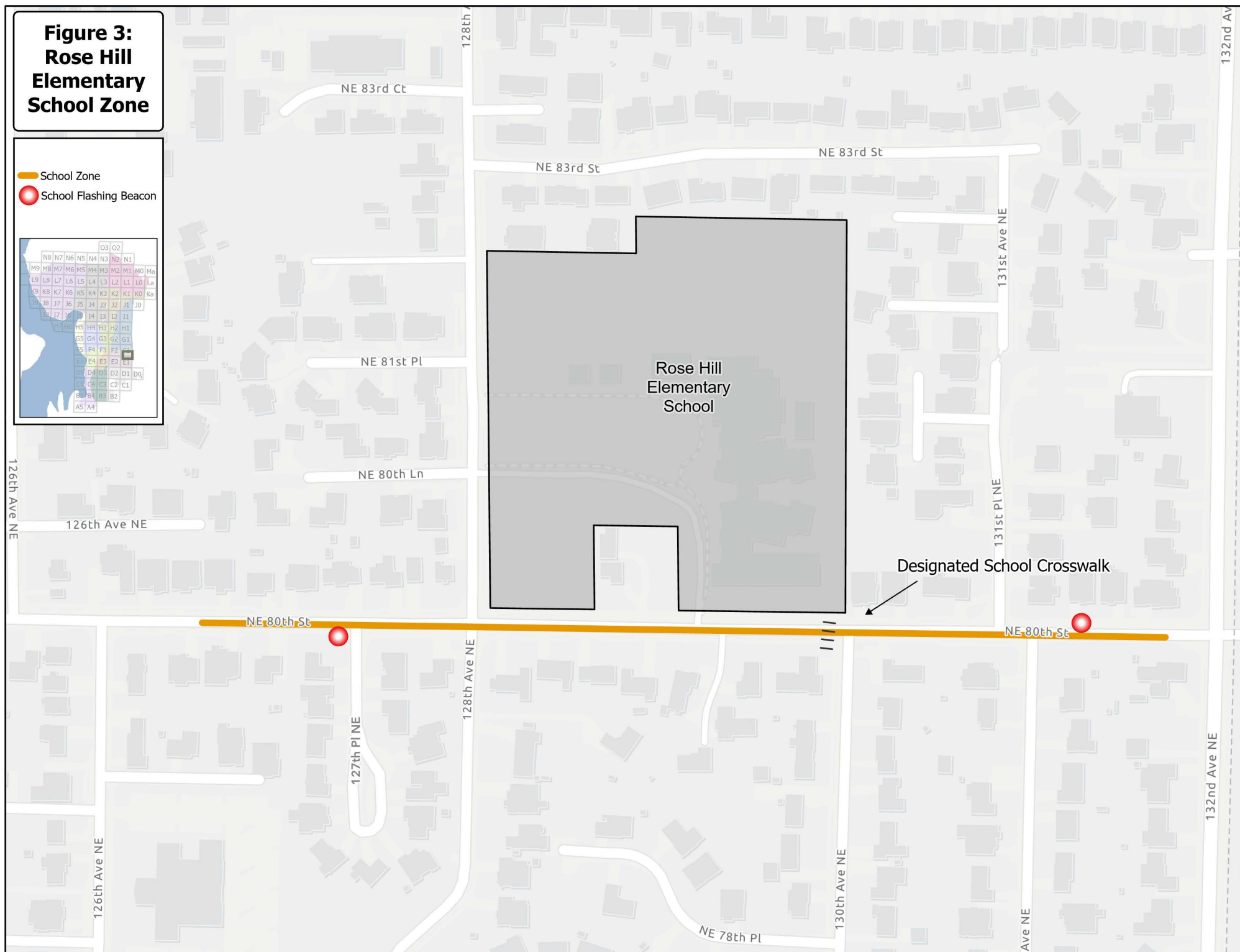
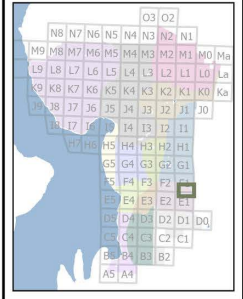
The eastbound school flashing beacon on NE 80<sup>th</sup> Street, shown on Figure 2, warns drivers that they are entering the 20mph school/crosswalk speed zone. It is placed 40 feet from the traffic safety camera and approximately 280 feet from school grounds, which is consistent with camera placement requirements and is compliant with RCW 46.61.440 and WAC 468-95-330.

#### **CONCLUSION AND RECOMMENDATION**

Per the findings of the engineering investigations and based on the engineering judgement of transportation engineering staff, it was deemed appropriate to place the solar powered school flashing beacon facing westbound traffic on NE 80<sup>th</sup> Street 390 feet east of the school crosswalk at 130<sup>th</sup> Ave NE, and to place the flashing beacon facing eastbound traffic 280 feet from the school

**Figure 3:  
Rose Hill  
Elementary  
School Zone**

-  School Zone
-  School Flashing Beacon





I hereby certify that the foregoing is a  
true and correct copy of Engineering Study  
Evaluating School sign Placement at NE 90th St.  
from W of 132nd AVE NE to east of 126th AVE NE.  
Maintained by the City of Kirkland.

E.M. Adkisson Acting City Clerk  
E.M. Adkisson