


**CITY OF KIRKLAND**
**Department of Public Works**
**123 Fifth Avenue, Kirkland, WA 98033 425.587.3800**
**www.kirklandwa.gov**
**ENGINEERING STUDY EVALUATING COMBINED SCHOOL ZONE**

 84<sup>th</sup> Avenue NE from South of NE 127<sup>th</sup> Court to North of NE 140<sup>th</sup> Street  
 Consolidated May 2024, City of Kirkland Public Works Transportation Division

Prepared by:



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**PURPOSE**

The purpose of this study is to formally document the engineering investigation and evaluation previously performed that resulted in the establishment of a combined school speed zone boundary on 84<sup>th</sup> Avenue NE. The combined school zone boundary includes three schools that are in close proximity and overlap with each other and are within close proximity of a designated school crosswalk.

In 2018, City of Kirkland Transportation Staff performed an engineering investigation to evaluate each 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 program expansion in 2023, this provided an additional opportunity to adjust select school zone signs to accommodate the addition of automated enforcement traffic safety cameras. Automated enforcement traffic safety cameras have specific requirements for placement of equipment and accompanying flashing school zone beacons. The placement of the traffic safety camera equipment was a joint decision between the City of Kirkland and the traffic safety camera vendor.

Although the schools may also overlap in hours of operation, and start and dismissal times may shift throughout time as set by the Lake Washington School District and therefore shift the

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

enforcement period, the focus of this study is to define the physical boundaries of the combined school zone along 84<sup>th</sup> Avenue NE.

## **BACKGROUND DISCUSSION**

Located in Kirkland's Finn Hill neighborhood, 84<sup>th</sup> Avenue NE is functionally classified as a collector with a default posted speed limit of 30 mph and a 2022 Annual Average Daily Traffic (AADT) of approximately 2,000 vehicles per day. The segment of 84<sup>th</sup> Avenue NE between NE 126<sup>th</sup> Street and NE 141<sup>st</sup> Street is approximately 5,000 feet long. On its west side it provides access to/from three schools: Henry David Thoreau Elementary School located at 8224 NE 138<sup>th</sup> Street, Finn Hill Middle School located at 8040 NE 138<sup>th</sup> Street, and Carl Sandburg Elementary School located at 12801 84<sup>th</sup> Avenue NE. Additionally, access is provided to Finn Hill Park located at 8106 NE 138<sup>th</sup> Street. The total frontage of these three school and Finn Hill Park makes up about 70% of the total length of the segment under consideration. The area adjacent to the east side of 84<sup>th</sup> Ave NE mostly encompasses low density residential land uses.

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:*

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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>

*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.*

*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.*

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

## **ENGINEERING STANDARDS**

Standards for sign placement and school speed zone delineation 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 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 of the document may differ from the version referenced in WAC 468-95-330. Previous versions of the manual are available on the MUTCD website.

## **SCHOOL SPEED ZONE BOUNDARY CONSIDERATIONS AND PLACEMENT**

**Henry David Thoreau Elementary.** The school speed zone when viewed from the southbound direction along 84<sup>th</sup> Ave NE begins, south of NE 141<sup>st</sup> Street (west leg), approximately 350 feet north of the school grounds boundary and ends at NE 126<sup>th</sup> Place.

The existing warning and regulatory signage that provides guidance to drivers traversing at/within the vicinity of Henry David Thoreau Elementary includes:

- **"SCHOOL ZONE" (S1-1)** sign, **"SCHOOL" (S4-3P)** and **"FINES HIGHER" (R2-6P)** plaques located about 240 feet in advance of the beginning of the school speed zone and about 110 feet in advance of the school crosswalk located at NE 141<sup>st</sup> Street (East Leg).
- **"SCHOOL CROSSWALK" (S1-1)** signs and **"ARROW" (W16-7P)** plaques placed on each side of the school crosswalk at NE 141<sup>st</sup> Street (East Leg).
- **"SCHOOL 20MPH SPEED" (S4-5)** advance warning sign with supplemental **"PHOTO ENFORCED"** warning plaque located approximately 110 feet in advance of the school flashing beacon.
- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole located approximately 330 feet from the northern boundary of the school speed zone. The school flashing beacon warns drivers that they are entering the 20 mph school zone.
- **"SCHOOL CROSSWALK" (S1-1)** sign and **"Next 1/4 Mile" (W16-2P)** plaque placed about 150 feet in advance of the school crosswalk at NE 138<sup>th</sup> Street (West Leg)
- **"SCHOOL CROSSWALK" (S1-1)** signs and **"ARROW" (W16-7P)** plaques placed on each side of the school crosswalk at NE 138<sup>th</sup> Street. This school crosswalk is located within the school speed zone.

The school flashing beacon, shown in Figure 1, is located approximately 330 feet from the northern parcel line boundary of the school grounds and it is placed 20 feet south from the traffic safety camera. The decision for the specific placement of the traffic safety camera and flashing beacon, was jointly made by the camera vendor and transportation engineering staff based on an engineering investigation that considered the factors described below:

- The traffic safety camera, per vendor's requirements, must be placed in close proximity to the school flashing beacon and no less than 300 feet from the boundary of school grounds. In addition, the traffic safety camera needs to have readily access to power; therefore, proximity to an existing PSE pole was also an important consideration.
- The existing school flashing beacon was originally located less than 300 feet from school grounds; consequently, in order to comply with WAC 468-95-330, the flashing beacon was relocated about 100 feet north from its original location to be in close proximity to the traffic safety camera.



Figure 1. Looking south on 84th Avenue NE toward Henry David Thoreau Elementary School.

Thus, based on the above, locating the beginning of the school speed zone at a distance slightly in excess of the required 300 feet was deemed appropriate.

In the northbound direction the school speed zone begins at NE 126<sup>th</sup> Place (about 3,300 feet from the southern boundary of the Henry David Thoreau Elementary School grounds) and it ends 80 feet north of NE 141<sup>st</sup> Street. An **"END OF SCHOOL ZONE" (S5-2)** located at northeast corner at NE 141<sup>st</sup> and 84<sup>th</sup> Ave NE officially defines the end of the school zone in the northbound direction.

**Finn Hill Middle School.** The school speed zone when viewed from the southbound direction along 84<sup>th</sup> Ave NE begins south of NE 141<sup>st</sup>, (approximately 2,000 feet from the northern boundary of the Finn Hill Middle school grounds) and it ends at NE 126<sup>th</sup> Place. It is noted that no traffic safety cameras exist within the vicinity of Finn Hill Middle School. The signage at/within the vicinity of Finn Hill Middle School includes the following:

- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole located about 220 feet in advance of the school crosswalk at NE 137<sup>th</sup> Street. This school flashing beacon remains at its original location. In other words, it was not relocated as part of the sign modifications required during the implementation of the traffic safety camera program on 84<sup>th</sup> Ave NE since no traffic safety camera would be installed in the vicinity of Finn Hill Middle School.

- **"SCHOOL CROSSWALK" (S1-1)** signs and **"ARROW" (W16-7P)** plaques placed on each side of the school crosswalk at NE 137<sup>th</sup> Street.
- **"SCHOOL ZONE" (S1-1)** sign, and **"SCHOOL" (S4-3P)** and **"FINES HIGHER" (R2-6P)** plaques located about 200 feet in advance of the northern boundary of the Finn Hill Middle School grounds. These signs provide warning for vehicles traversing the Finn Hill Middle school zone.

It is noted that the 2,000 feet distance mentioned above includes the Henry David Thoreau Elementary School speed zone and the 20mph speed limit zone associated with the school crosswalk at NE 137<sup>th</sup> St which overlaps with both school speed zones.

Per the results of the engineering investigation, it was not deemed appropriate to attempt to end or interrupt both the NE 137<sup>th</sup> Street school crosswalk and the Henry David Thoreau Elementary School speed zones. Consequently, a decision was made based on engineering judgement, and in alignment with the WAC and RCW noted above, to integrate both school speed zones into one combined school speed zone that also includes the NE 137<sup>th</sup> Street school crosswalk 20 mph speed zone.

Additional justification for the decision to establish the combined school speed zone is to enhance and preserve the safety of school children, their families, and caregivers before, during, and after school hours, when traveling to and from an adjacent school or area.

In the northbound direction, the Finn Hill Middle school speed zone begins at NE 126<sup>th</sup> Place (about 1700 feet south of the southern boundary of the school grounds). It is noted that it includes the Carl Sandburg Elementary school speed zone. The justification for this is based on the results of the engineering investigation and it is clarified in following sections of this report. The signage (facing northbound traffic) at the vicinity of Finn Hill Middle includes the following:

- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole located on the east side of 84<sup>th</sup> Ave NE south of NE 131<sup>st</sup> Place, approximately 340 feet from school grounds. This school flashing beacons remains at its original location. In other words, it was not relocated as part of the sign modifications required during the implementation of the traffic safety camera program on 84<sup>th</sup> Ave NE since no traffic safety camera would be installed in the vicinity of Finn Hill Middle School.
- **"SCHOOL ZONE" (S1-1)** sign, **"SCHOOL" (S4-3P)** and **"FINES HIGHER" (R2-6P)** plaques located on the east side of 84<sup>th</sup> Ave NE about 240 feet north of NE 132<sup>nd</sup> Street. This sign assembly provide warning for vehicles traversing the Finn Hill Middle school speed zone.
- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole located on the east side of 84<sup>th</sup> Ave NE, approximately 340 south of the NE 137<sup>th</sup> Street school crosswalk. This school flashing beacon remains at its original location since per the results of the engineering investigation no relocation was deemed necessary. The school flashing beacons provides a reminder to vehicles that they are in a 20 mph zone at the NE 137<sup>th</sup> Street crosswalk.

**Carl Sandburg Elementary.** The school speed zone when viewed from the southbound direction along 84<sup>th</sup> Ave NE begins south of NE 141<sup>st</sup> Street (approximately 3200 feet north of the

school grounds boundary) and ends at NE 126<sup>th</sup> Place. It is noted that in addition to the Carl Sandburg Elementary school speed zone, this also includes the speed zones of Henry David Thoreau Elementary, NE 137<sup>th</sup> Street school crosswalk and Finn Hill Middle school, resulting in the combined school zone shown in Figure 2 on the last page of this memo.

The establishment of said combined school speed zone was based on the findings of the engineering investigation listed below:

- The NE 137<sup>th</sup> St school crosswalk speed zone overlaps with Henry David Thoreau Elementary School and Finn Hill Middle School speed zones.
- The school speed zone boundaries of Finn Hill Middle School and Carl Sandburg Elementary School overlap with each other.

Per the engineering investigation, it was not deemed appropriate to attempt to end or interrupt either Henry David Thoreau Elementary and Finn Hill Middle School speed zones and/or extend the Finn Hill Middle school speed zone within the boundaries of the Carl Sandburg Elementary school speed zone or vice versa. Consequently, a decision was made, based on the results of the engineering investigation to integrate the three school speed zones into one combined school speed zone that also includes the NE 137<sup>th</sup> Street school crosswalk 20 mph speed zone.

The existing signage on 84<sup>th</sup> Ave NE (facing southbound traffic) at/within the vicinity of Carl Sandburg Elementary School includes:

- **"SCHOOL ZONE" (S1-1)** sign, **"SCHOOL" (S4-3P)** plaque and **"FINES HIGHER" (R2-6P)** plaques located about 300 feet in advance of the northern boundary of the school grounds.
- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole located about 200 feet north of the northern boundary of the school grounds.
- **"SCHOOL CROSSWALK" (S1-1)** sign and **"1/4 Mile" (W16-2P)** plaque placed about 200 feet in advance of the school crosswalk at NE 129<sup>th</sup> Place.
- **W16-7P "SCHOOL CROSSWALK" (S1-1)** sign and **"ARROW" W16-7P** plaque placed on each side of the school crosswalks at NE 129<sup>th</sup> Place, NE 128<sup>th</sup> Streets and NE 126<sup>th</sup> Place
- **"END SCHOOL ZONE" (S5-2)** located on west side of 84<sup>th</sup> Ave NE south of NE 126<sup>th</sup> Place.

The school speed zone when viewed from the northbound direction begins north of NE 126<sup>th</sup> about 300 feet from the school grounds, which is consistent with WAC 468-95-330. Per the findings of the engineering investigations, it ends at NE 141<sup>st</sup> Street (West leg).

The existing signage (located on the east side of 84<sup>th</sup> Ave NE) facing the northbound direction of traffic includes:

- **"SCHOOL ZONE" (S1-1)** sign, **"SCHOOL" (S4-3P)** and **"FINES HIGHER" (R2-6P)** plaques located about 250 feet in advance of the beginning of the school speed zone.
- **"SCHOOL CROSSWALK" (S1-1)** sign and **"1/4 Mile" (W16-2P)** plaque placed about 60 feet in advance of the school crosswalk at NE 126<sup>th</sup> Place.

- **"SCHOOL CROSSWALK" (S1-1)** sign and **"ARROW" (W16-7P)** plaque placed on each side of the school crosswalks at NE 126<sup>th</sup> Place, NE 128<sup>th</sup> Street and NE 129<sup>th</sup> Place.
- **"SCHOOL 20MPH SPEED" (S4-5)** advance warning sign with supplemental **"PHOTO ENFORCED"** warning plaque located approximately 80 feet in advance of the school flashing beacon.
- **"SCHOOL SPEED LIMIT, 20 MPH WHEN FLASHING" (S5-1)** sign assembly placed on the school flashing beacon pole located approximately 300 feet from beginning the school speed zone. The school flashing beacon warns drivers that they are entering the 20 mph school zone.

The school flashing beacon, shown in Figure 3, remains at its original location. The traffic safety camera is placed in close proximity to the school flashing beacons as recommended by the traffic safety camera vendor.

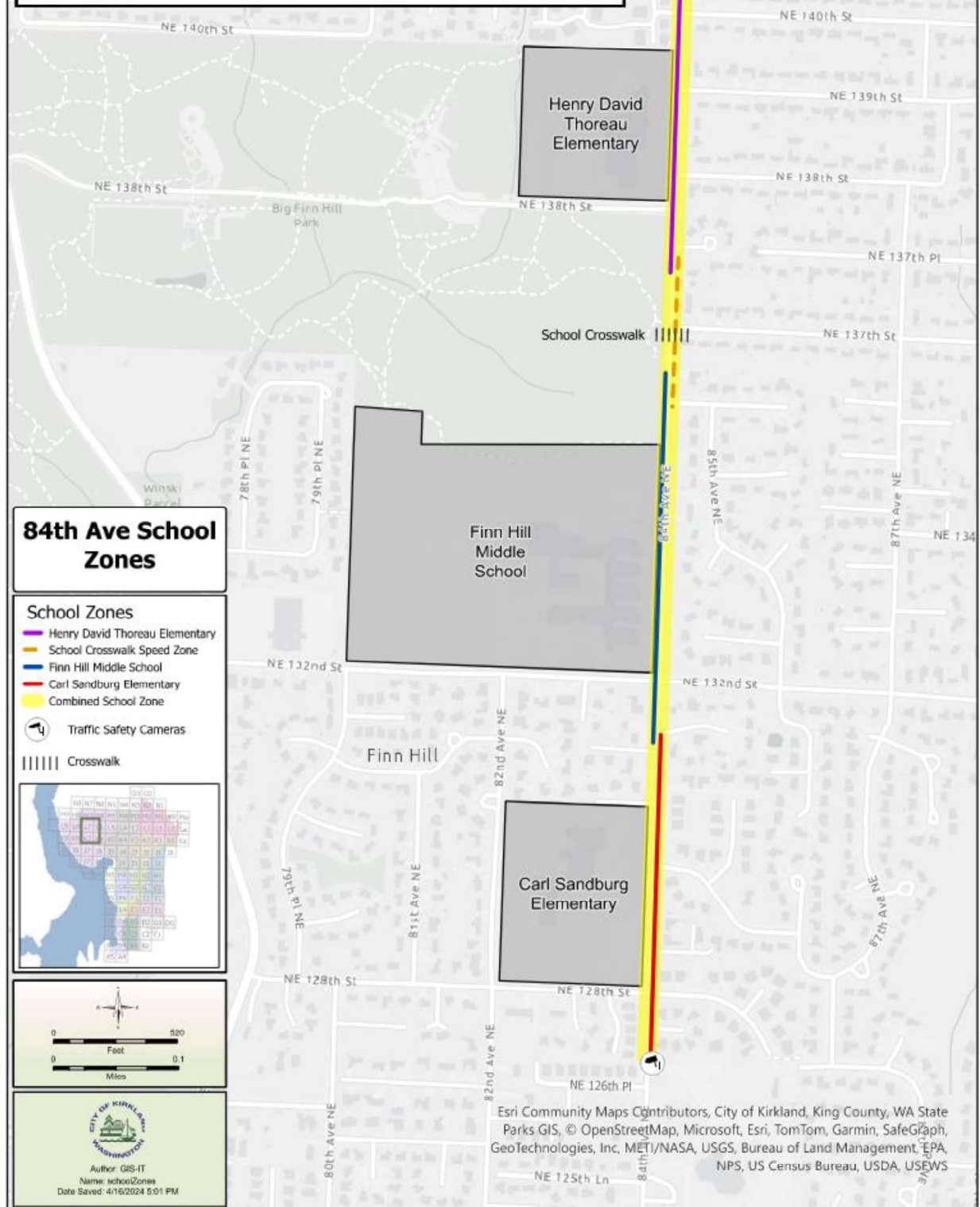


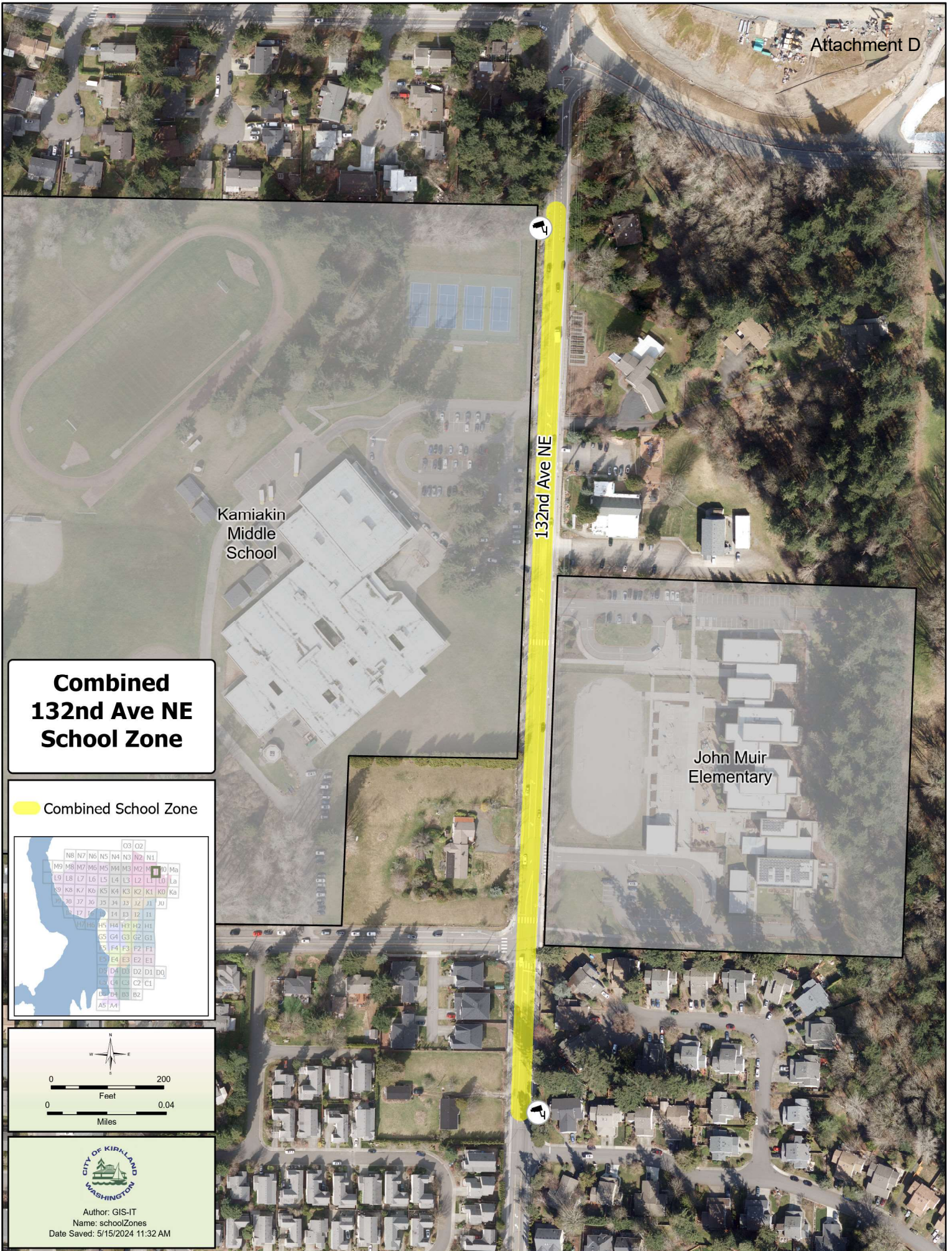
*Figure 3. Looking north on 84<sup>th</sup> Avenue NE toward Carl Sandburg Elementary School.*

## **CONCLUSION AND RECOMMENDATION**

Per the findings of the engineering investigations and based on the engineering judgement of transportation engineering staff, it is recommended that one combined school speed zone of approximately 4,800 feet in length be established along the segment of 84<sup>th</sup> Avenue NE in the vicinity of Henry David Thoreau Elementary School, Finn Hill Middle School, the NE 137<sup>th</sup> Street designated school crosswalk, and Carl Sandburg Elementary School as shown in Figure 2 on the last page of this study.

**Figure 2**  
**Combined School Speed Zone Boundary for 84th Avenue NE**  
**Dated May 2024, City of Kirkland Public Works Transportation Division**









I hereby certify that the foregoing is a  
true and correct copy of Engineering  
Study Evaluating Combined School Area -  
94th Ave NE from S of NE 127th Ct to N of NE  
Maintained by the City of Kirkland. <sup>140th</sup> Street.  
E. M. Adkisson Acting City Clerk  
E. M. Adkisson