

Connect Lynnwood: Appendix H

**168th St SW CORRIDOR PLANNING STUDY
FINAL REPORT**

June 2022





168th Street SW Corridor Planning Study

Final Report

May 2018



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1 INTRODUCTION

168th Street SW connects schools, parks, trails, and commercial areas across north Lynnwood. Meadowdale Middle, Elementary, and High schools, along with Beverly Elementary School, are the primary trip generators along the corridor, as well as the clusters of businesses at 52nd Avenue W and all around the east end of the corridor by SR 99. The study corridor measures 1.4 miles, from 66th Avenue W at the Meadowdale Playfields to 44th Avenue W. SR 99 intersects the corridor on the east end. East of Olympic View Drive, 168th Street SW is classified as a minor urban arterial street.

The corridor lies within the Meadowdale Beverly Acres neighborhood, with the city of Edmonds to the west, Spruce Hills neighborhood to the east of SR 99, and unincorporated Snohomish County to the north. Transit service operated by Community Transit is available along much of 168th Street SW (Route 119), and Swift BRT service is available along SR 99.

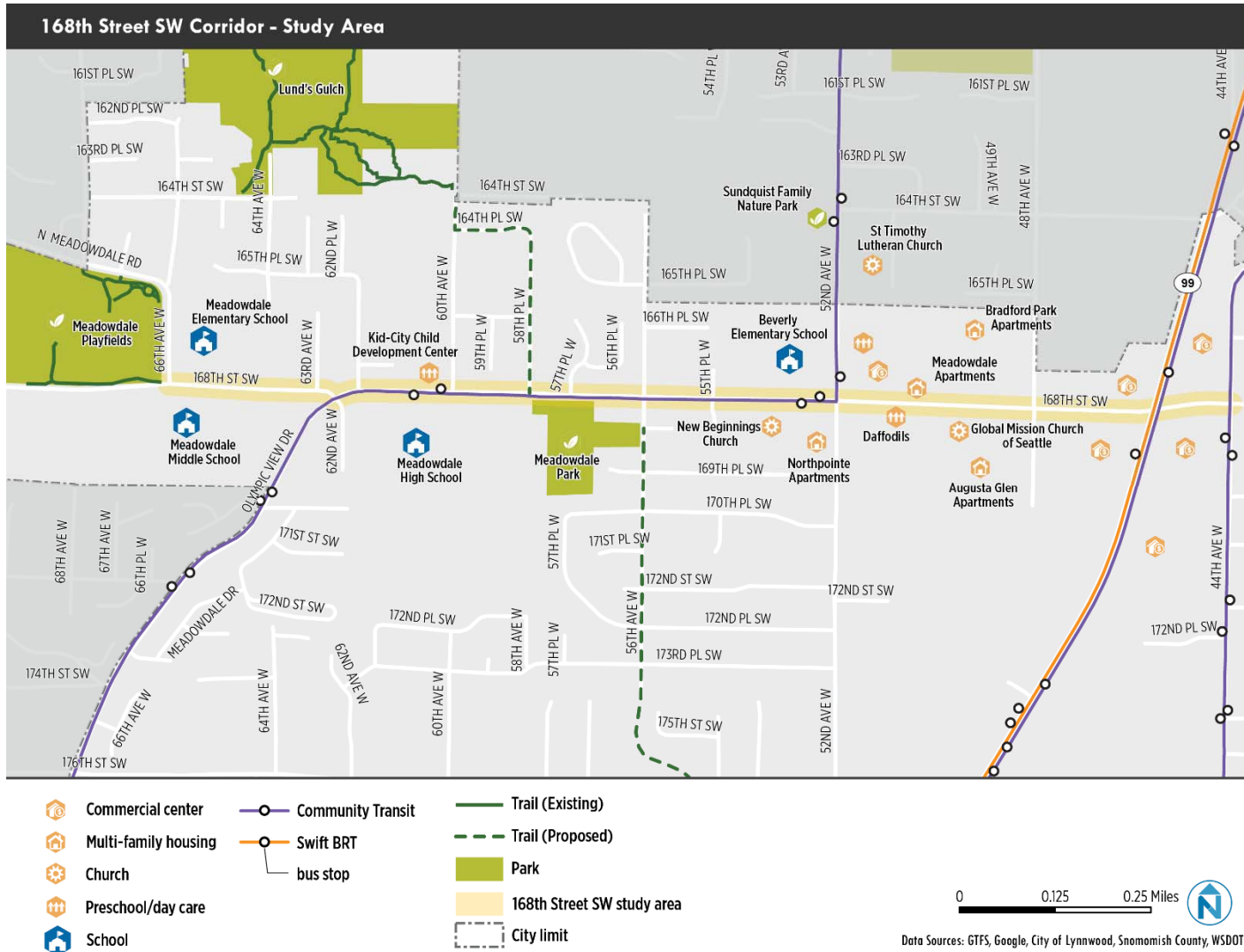
Figure 1 shows the 168th Street SW corridor study area (including major generators of travel demand), and Figure 2 depicts an aerial overview. From 52nd Avenue W to 44th Avenue W, the zoning becomes much more varied, with a mix of medium-density housing and commercial parcels.

The city of Lynnwood has a population of approximately 36,861 people.¹ Roughly 11,300 people live within a half-mile of the study corridor, including residents of Edmonds and unincorporated Snohomish County. School children, teachers, and parents are primary users of the street. Enrollment at the four schools along the corridor totaled 3,421 in fall 2017.

¹ American Community Survey 2016 5-year estimates – Table S0101

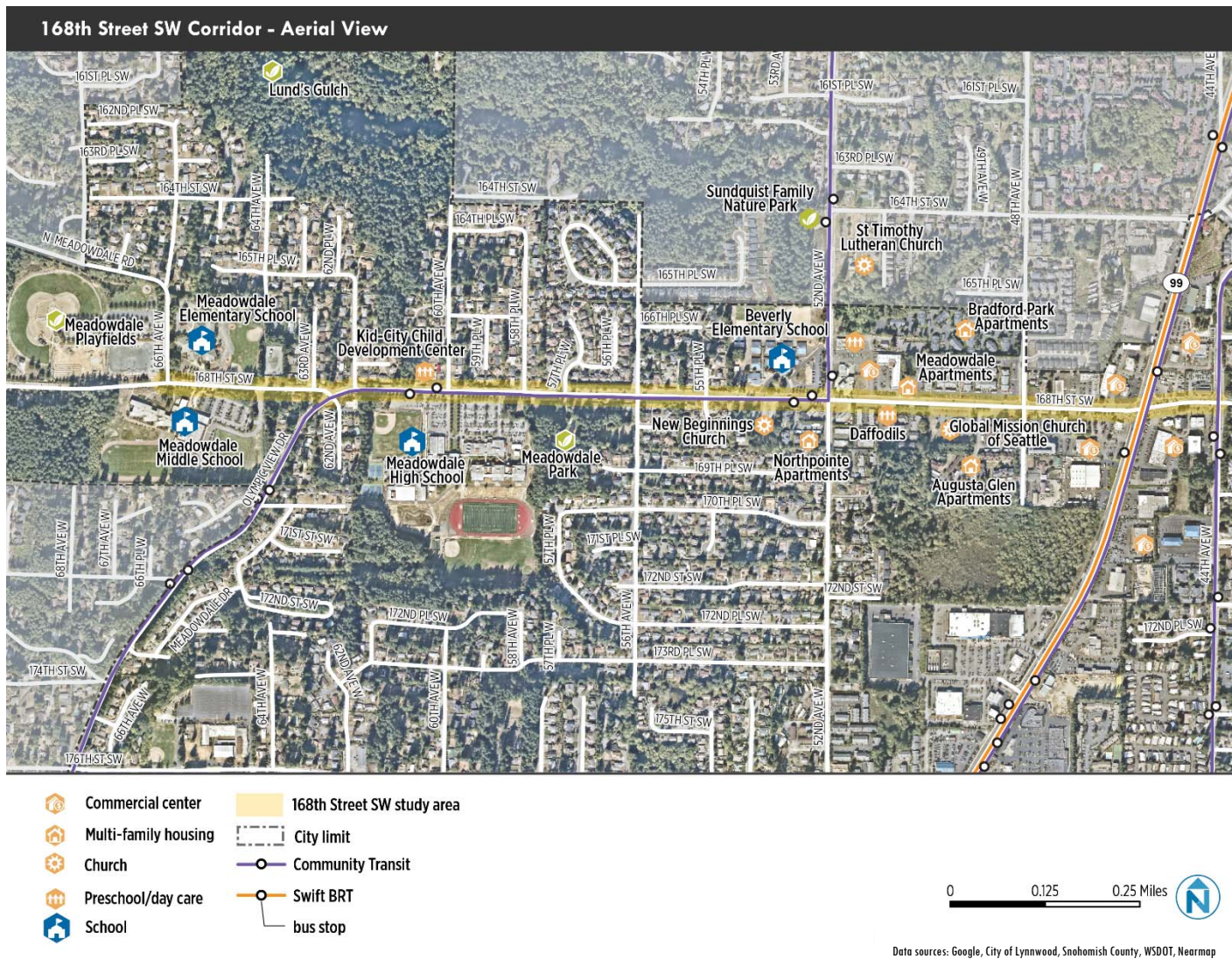
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Figure 1 168th Street SW Study Area



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Figure 2 Aerial View of Study Area



STREET LAYOUT

The study area can be divided roughly into three general segments: 66th Avenue/Meadowdale Playfields to Olympic View Drive/62nd Avenue W; Olympic View Drive to 52nd Avenue W; and 52nd Avenue W to 44th Avenue W. The west end of the study area feels quiet, and has one travel lane per direction and trees lining the sidewalks (Figure 3). The central segment, the longest section at 1.1 miles, has a fairly consistent cross-section throughout of two travel lanes per direction plus a center turn lane (Figure 4). The curb lanes are wide, measuring 15 feet, and the sidewalks are directly adjacent to vehicle traffic, meaning there are no trees or landscaping buffers. The short segment between SR 99 and 44th Avenue W looks very similar to the central segment, with a slight variation in terms of the width of the lanes (Figure 5).

Figure 3 Street Cross-Section, west end typical (66th Avenue W to Olympic View Drive)

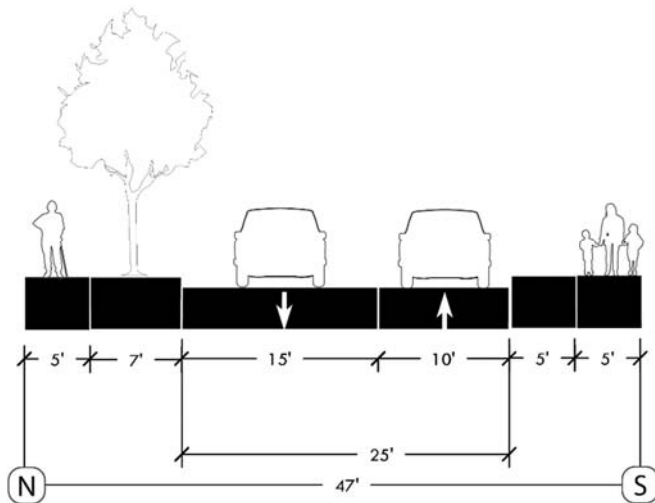


Figure 4 Street Cross-Section, central section typical (Olympic View Drive to SR 99)

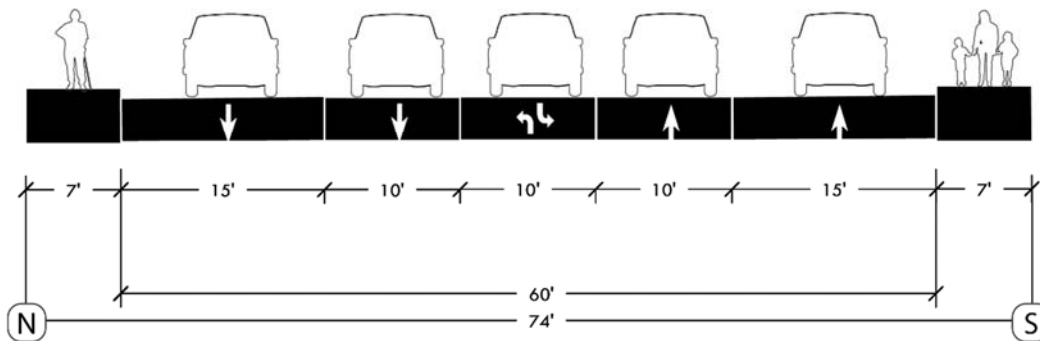
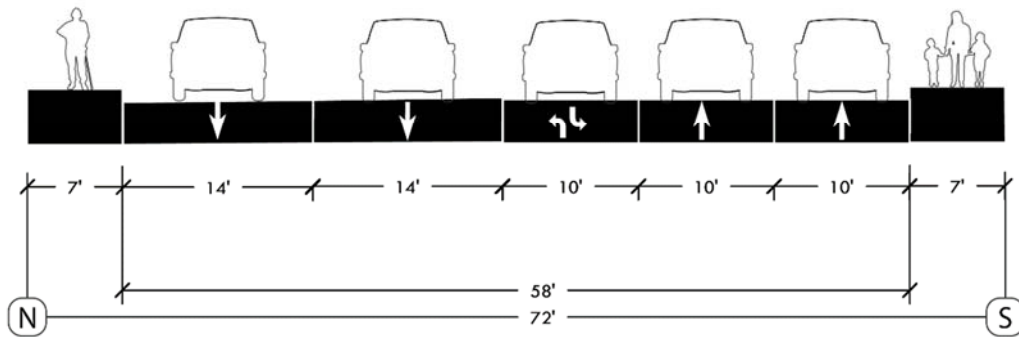


Figure 5 Street Cross-Section, east end typical (SR 99 to 44th Avenue W)



STUDY PROCESS

The study's goals were to find ways of making 168th Street SW safer for all users, engage the community in creating solutions, and come up with a vision and list of projects that make the corridor into a complete street, or a place safe and comfortable for users of all types of transportation. Key project tasks included:

- Analyzing current transportation conditions by mode along and across the corridor, including circulation and access patterns, vehicle speeds and volumes, safety data, and typical condition
- Conducting stakeholder interviews to gain a deeper understanding of corridor issues and opportunities
- Holding a community “walkshop” where members of the community walked the corridor together, learned about multimodal street design, and proposed ideas for segments of 168th Street SW
- Drafting five cross section alternatives that address needs identified by the project team's analysis and community input
- Convening a community open house to gather feedback on the proposed designs, and refining these into a preferred concept that aligns with community needs and priorities
- Creating a short-term project list that moves the corridor toward the preferred concept

Data analysis and community input revealed numerous opportunities to use complete streets concepts and make the street better for all users. High vehicle speeds, numerous crashes, and community input that it feels unsafe to cross the street all inhibit travel along 168th Street SW by any means other than driving. At the same time, increasing the number of people bicycling and walking for school trips has the potential to alleviate congestion during school bell times and improve conditions for drivers. The corridor's designation as a regional bicycling connection as well as the number of schools, daycare facilities, and multi-family housing along the corridor justify the need for improvements to better serve travelers of all ages and abilities.

The results of this planning study will ultimately be used to build a competitive application for submittal to Washington Department of Transportation's 2018 Safe Routes to School (SRTS) grant funding cycle. Securing SRTS funding would enable the City of Lynnwood, in partnership

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with Edmonds School District and Snohomish County, to plan, design, and construct short-term projects that enhance the safety and desirability for people walking or bicycling along or across 168th Street SW, especially students and families walking or bicycling to school.

2 PURPOSE AND NEED

SAFETY

Crashes

Between January 2012 and November 2017, 276 crashes occurred along the study corridor. These crashes represent 3.4% of all crashes that occurred in the city of Lynnwood during that period, but the 1.4-mile study corridor comprises just 1.1% of the total roadway miles in the city. This suggests that the 168th Street SW corridor experiences a higher rate of crashes than other streets in Lynnwood. Two-thirds of the crashes along the study corridor were concentrated at three intersections: 52nd Avenue W, 48th Avenue W, and SR 99. More than 80% of the 276 total crashes were of low severity, resulting in possible injury or property damage only (PDO). These PDO crashes, while not contributing directly to injuries or deaths, still impose costs to individuals and society in terms of insurance premiums, time lost due to traffic congestion, emergency response costs, and lost productivity in the home and the workplace. In 2010, costs from PDO crashes totaled over \$71 billion nationwide. Crashes affect far more than just those directly involved; people not directly involved in the crashes incur over three-quarters of these costs.²

Minor and serious injury crashes involving all modes of travel were concentrated along the section of the corridor between 56th Avenue W and Olympic View Drive. All of the corridor's serious injury crashes, and four of the six minor injury crashes occurred in this segment of 168th Street SW. Crash detail along the central segment is shown in Figure 6.

² NHTSA: The Economic and Societal Impact of Motor Vehicle Crashes, 2010 (Revised)
<https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/812013>

Figure 6 Central Corridor Crash Detail



Eleven crashes involved people bicycling or walking, which are summarized in Figure 7 and mapped in Figure 8. Of these crashes, 36% resulted in suspected minor injury. Of the crashes that only involved motor vehicles, 1.5% resulted in a suspected minor injury or worse. This suggests that people walking or bicycling are much more vulnerable to injury in crashes.

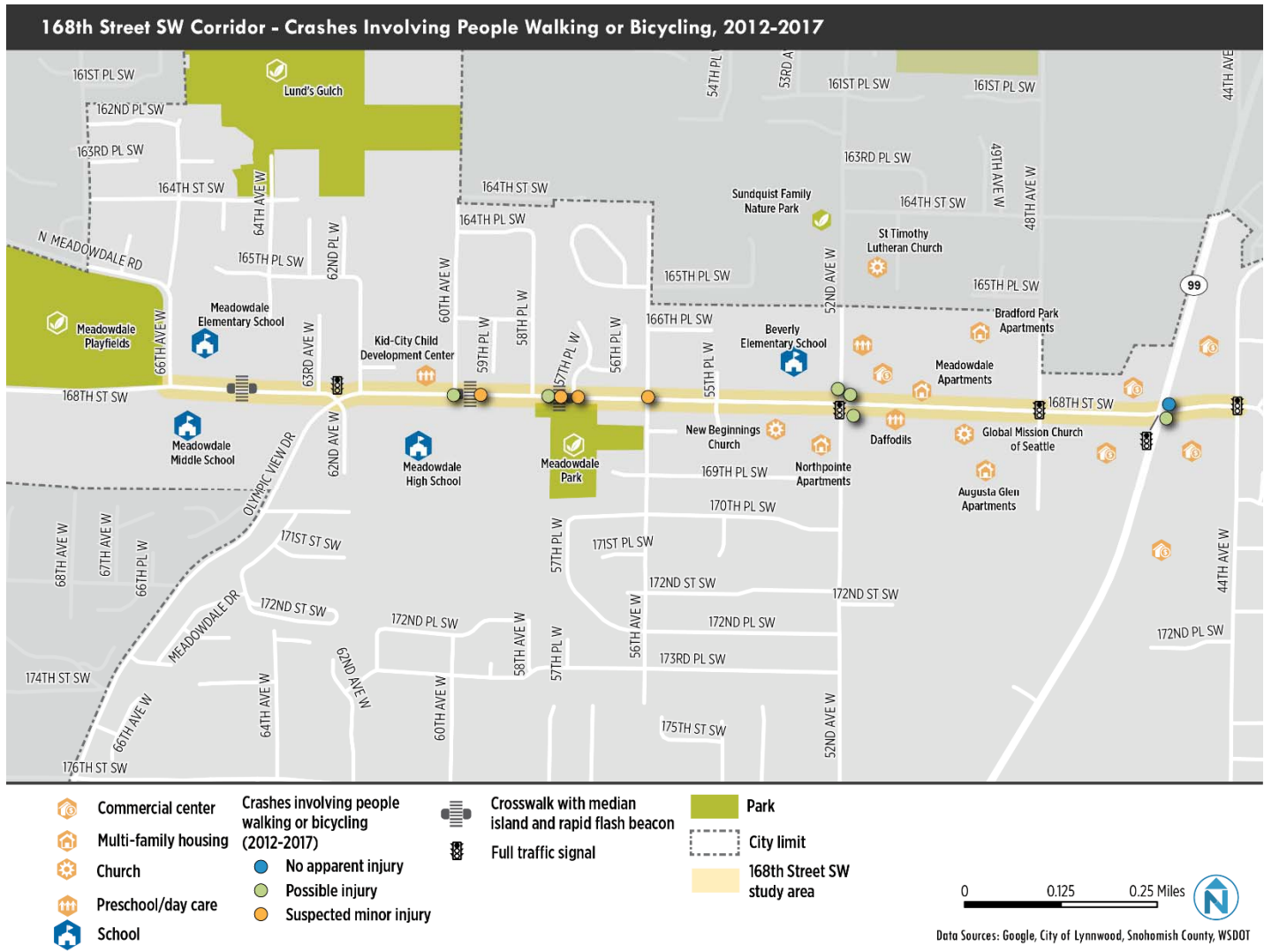
Figure 7 Pedestrian- and Bicyclist-Involved Crashes, 2012-2017

| Severity | Number of Crashes |
|------------------------|-------------------|
| No apparent injury/PDO | 1 |
| Possible injury | 6 |
| Suspected minor injury | 4 |
| Total | 11 |

Source: WSDOT

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Figure 8 Pedestrian- and Bicyclist-Involved Crash Locations, 2012-2017



Speed

People driving along the central segment of the corridor tend to exceed the speed limit, both within designated school speed zones and in the short stretches in between school zones. Hourly average speeds for eastbound and westbound vehicular traffic were collected during a weekday in January 2018 and are shown in Figure 9 and Figure 10. Data show that speeds near Meadowdale High School were largely near the 20 mph school zone speed limit during school hours, but outside of school hours people driving regularly exceeded the posted 30 mph speed by 4 mph to 6 mph. The highest speeds along the corridor were recorded just west of Beverly Elementary School near 52nd Avenue W, where drivers regularly exceed both the posted speed limit and school zone speed limit.

Figure 9 Average Hourly Speeds by Direction near Meadowdale High School

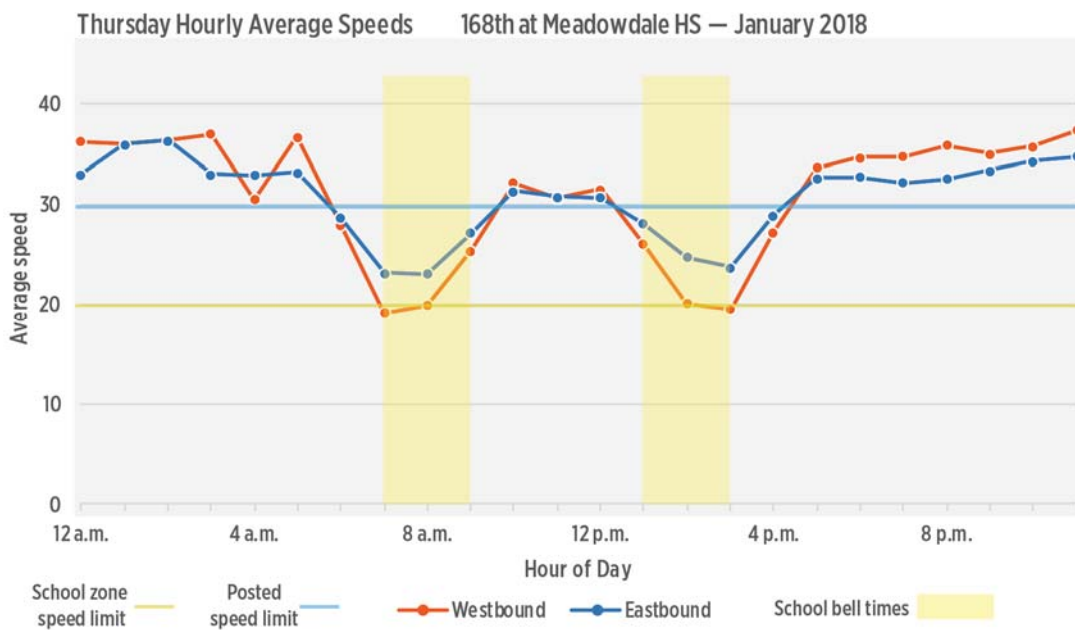
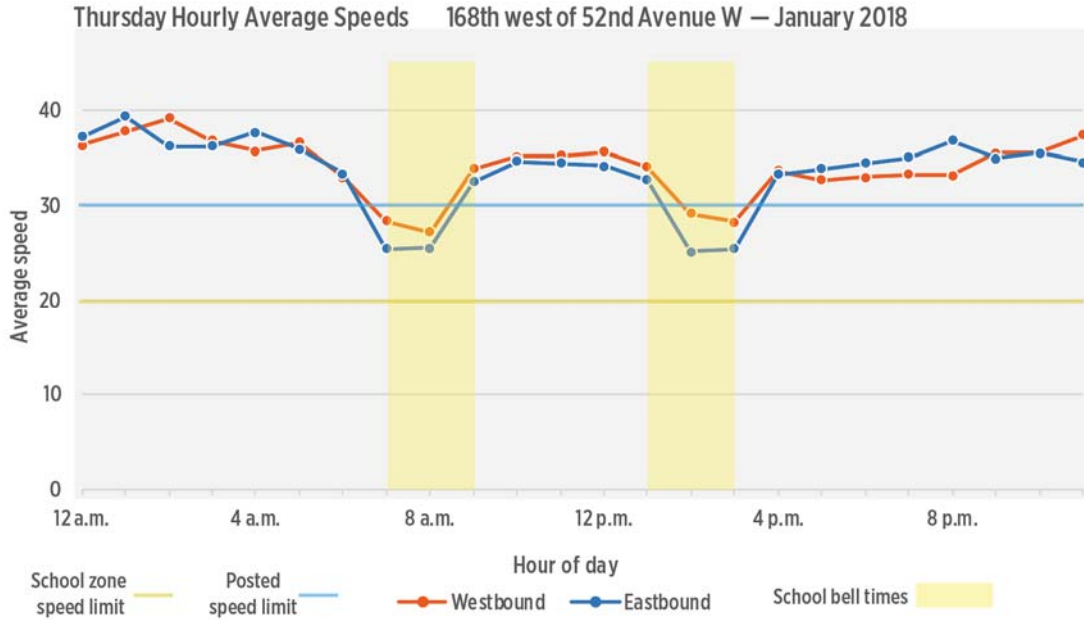


Figure 10 Average Hourly Speeds by Direction west of 52nd Avenue



Source: City of Lynnwood

Lighting

Lighting enhances safety by fostering visibility between users, and also can create a sense of security. Numerous community members cited a lack of lighting as a reason why they or their children do not walk along 168th Street SW. Pedestrian-scale lighting can help ensure that people driving, walking, or bicycling can see each other in the early mornings and evenings.

MOBILITY FOR PEOPLE WALKING AND BICYCLING

In its current state, the 168th Street SW corridor design primarily supports vehicle movement, but has potential for much higher levels of walking and bicycling than are observed today. Approximately 11,300 people live within a half-mile of the corridor,³ a distance that many people walking or bicycling can travel in 10 minutes or less. Data from the U.S. Census Bureau show that residents of Lynnwood commute by bicycling or walking at lower rates than the state of Washington as a whole,⁴ indicating potential for growth in non-driving usage. Approximately 27% of all students at the four schools along the corridor live within one mile of their school buildings, a distance that many could comfortably walk in 20-25 minutes, or bicycle in 5-7 minutes.

The street is designated and signed as a bicycle route, but does not have dedicated facilities. Community members expressed concern about themselves or their children bicycling along the street without robust bicycling facilities.

Sidewalks are generally present and in good condition throughout the study area; however, people must walk directly adjacent to five lanes of vehicle traffic, which is less comfortable than

³ Source: American Community Survey 2016 5-year estimates

⁴ Source: American Community Survey 2016 5-year estimates – Table B08301

places west of Olympic View Drive that have a landscaping buffer. Frequent driveway curb cuts, especially east of 52nd Avenue W, introduce conflict points in the walking network. Stakeholders along the east end of 168th Street SW feel that crossing SR 99 is unsafe due to long crossing distances and high vehicle speeds and volumes. Many people said they preferred driving 500-1,000 feet for errands rather than walking. The conditions also present challenges for people accessing the high capacity transit service offered by Swift BRT on SR 99.

Figure 11 Typical Walking and Bicycling Conditions



People walking along 168th Street SW are immediately adjacent to vehicles regularly traveling 35-40 MPH. Sidewalks are relatively narrow (7') and offer no buffer from street traffic.



Some people feel comfortable bicycling in the street, but in many cases sharing the lane with vehicle traffic is a significant barrier for people who would consider bicycling.

EQUITY

The City of Lynnwood's Healthy Communities Action Plan identifies policies and built environment changes that make the healthy choice the easy choice, including increasing access to safe opportunities for physical activity.⁵ Walking or bicycling on a regular basis such as for short trips to school, work, shopping, or to take transit have been shown to improve health outcomes and reduce rates of chronic disease, including heart disease, diabetes, and cardiovascular disease.

42% of Beverly Elementary School students qualify for the school free/reduced lunch program, compared to



Source: City of Lynnwood *Healthy Communities Action Plan*

⁵ Health Communities Action Plan (2015)

<http://www.lynnwoodwa.gov/Assets/Departments/Parks/Documents/Healthy+Communities+Action+Plan+Report.pdf>

43.7% of students statewide.⁶ Additionally, the Beverly Elementary School student body is comprised of 57% of students of color, and the Meadowdale High School student body is comprised of 51% of students of color. People of color have been shown to experience health disparities due to racial inequities affecting determinants of health. Making walking and bicycling easier along and across 168th Street SW can play a role in improving health outcomes and achieving health equity in Lynnwood.

ALIGNMENT WITH OTHER CITY PROJECTS

Complete Streets Policy

The City of Lynnwood is currently working with staff across city departments to develop a Complete Streets policy that will establish guiding principles and practices to ensure Lynnwood's transportation network is planned, designed, constructed, and maintained for a variety of multimodal options and users. This effort will culminate with the City Council's adoption of the Complete Streets policy and ordinance. The 168th Street SW Corridor Planning Study aligns with the city's Complete Streets policy development effort by analyzing the experience of people walking, bicycling, and taking transit along the corridor and recommending improvements that will enhance safety and benefit all users.

Pedestrian and Bicycle Facilities Design Standards Update

As a way to implement the forthcoming Complete Streets policy, the City of Lynnwood will update its pedestrian and bicycle facilities design standards. These standards establish the typical street design elements that support safe and attractive walking and bicycling on Lynnwood's streets. The 168th Street SW Corridor Planning Study analyzed and presented a variety of bicycle and pedestrian designs to the community. Community members provided feedback on what street design elements make them feel most comfortable walking and bicycling. This feedback and range of bicycle and pedestrian features and facility types will be considered as a part of the design standards update.

ADA Transition Plan

The City of Lynnwood is currently undertaking the development of its Americans with Disabilities Act (ADA) Transition Plan, which will ensure that the city's public facilities, parks, and public right-of-way are accessible. The transition plan will identify physical obstacles that limit the accessibility of facilities to people with disabilities, describe methods to make facilities accessible, and provide a schedule for making modifications to provide better access. The 168th Street SW Corridor Planning Study identified improvements that would make the corridor more accessible to people of all abilities including signal timing adjustments, and the installation of new or retrofitting of non-compliant ADA curb ramps for people crossing the street with mobility assistive devices.

⁶ Source: Office of Superintendent of Public Instruction (OSPI) State Report Card (2011): <http://reportcard.ospi.k12.wa.us/summary.aspx?year=2010-11>

3 THE 168TH STREET CORRIDOR

This section provides an overview of existing conditions along the corridor for people walking, bicycling, taking transit, and driving, and examines circulation patterns at key sites including schools and commercial centers. Additional detail for items described here can be found in the Corridor Usage Memo.

WALKING

Sidewalks are present along almost the entirety of 168th Street SW. East of Olympic View Drive, sidewalks generally measure 7 feet on either side of the street. West of Olympic View Drive, sidewalks are narrower (5 feet), but they are buffered by a grass or tree planting strip. On the side streets, however, sidewalks are often missing west of 58th Place SW. Sidewalks are also missing north of Beverly Elementary School on 52nd Avenue W; this is a crucial gap because the school's catchment area lies to the north of the school.

There are nine marked crosswalks to support street crossings along the corridor. Three locations consist of flashing beacons and pedestrian warning signs and refuge islands: two near Meadowdale High School and one in front of Meadowdale Middle and Elementary Schools. During fieldwork at school times, drivers were observed complying with the flashing beacons.

Five locations occur at signalized intersections. The sixth protected crossing is a stop-controlled location at 66th Avenue West. The average distance between marked crossings is .16 mile apart or 845 feet. There is a long gap in signal spacing (.65 miles) from Olympic View Drive to 52nd Avenue W. To create walkable communities, many cities strive for crossing spacing of every 200-400 feet.

Typical walking conditions along the corridor are shown in Figure 12.

Figure 12 Walking Conditions



The west end of the corridor has buffered sidewalks and one vehicle lane per direction



In general, sidewalks measure 7', enough space for two adults to walk next to each other comfortably



Long spacing between protected crossings means that people run across the street at unmarked locations, such as at this location by the New Beginnings Church across from Beverly Elementary School

The 52nd Avenue W intersection is wide and drivers were observed making high-speed turns

From January 2012 through early November 2017, there were seven pedestrian-involved crashes along the corridor (Figure 8). None of the crashes was fatal or resulted in serious injury. Three pedestrian-involved crashes took place at 52nd Avenue W, two at SR 99, and the remaining two along the unsignalized blocks in front of Meadowdale High School.

BICYCLING

Today 168th Street SW is a signed bicycle route in the Bike2Health network, with signage extending from Olympic View Drive to 44th Avenue W, but there is no designated place for people to ride. The nearest dedicated on-street bicycle infrastructure is found on 44th Avenue W and 52nd Avenue W. On 44th Avenue W this consists of a striped bicycle lane in each direction to the south of 168th Street SW. On 52nd Avenue W a striped bicycle lane approaches 168th Street SW from both the north and the south, but from both directions the bicycle lane markings end well over a block from the intersection with 168th Street SW. Despite the current lack of facilities on the corridor, this street plays a major role in Lynnwood's future bicycling network. Two adopted city plans call for more robust facilities:

- The Bike2Health plan is a cooperative effort between the cities of Lynnwood, Edmonds, and Mountlake Terrace to create a regional bicycle network across south Snohomish County. It established several key north/south and east/west corridor routes, connecting major destinations and transit hubs. Plan documents designate 168th Street SW as an "existing bicycle facility," with bicycle route signage.
- The city parks plan proposes multi-use trail connections across 168th Street SW, including a central "spine" trail that would connect Lynnwood's City Center with Lund's Gulch and Puget Sound. Bicycle facilities are also proposed on 52nd Avenue W both north and south of the study corridor, as well as bicycle routes to Meadowdale High, Middle, and Elementary schools.

The lack of dedicated bicycling facilities along 168th Street SW is likely a barrier for many people who do not feel comfortable riding on a busy street in the traffic lanes. Since 2012, there have been four crashes along the corridor that involved a person bicycling (Figure 8). All occurred in

the roadway between Meadowdale High School and 56th Avenue W, and two resulted in minor injuries.

Typical bicycling conditions along the corridor are shown in Figure 13.

Figure 13 Bicycling Conditions



168th Street SW provides linkages to numerous bicycle routes. Bike2Health signage designates the street as a bicycle route.



Bicycle route signage is placed low to the ground and obstructs travel along the sidewalk.



Some bicyclists take the travel lane



Others were observed bicycling on the sidewalk

TRANSIT

Four Community Transit routes serve the corridor, including the Swift BRT line on SR 99, connecting the study area to points across Snohomish County. Route 119 travels along roughly half the length of the study corridor, while routes 101 and 112 intersect the eastern end of the corridor. The transit lines along the corridor serve destinations in Everett, Aurora Village, Mountlake Terrace, and Edmonds. There are Swift stops just to the north and south of 168th Street SW, at 174th Place SW and 176th Street SW. Students were observed walking along 168th Street SW and crossing SR 99, and stakeholders confirmed that some students travel to school via transit.

DRIVING

Through most of the corridor, 168th Street SW consists of four lanes for general purpose vehicle traffic, in addition to a center two-way left turn lane. The street is classified as a minor arterial. Posted speed limits along the corridor are 30 mph, with three separate school zones that have 20 mph limits when children are present or when school zone signs are flashing. During a typical day in 2018, the central stretch of 168th Street SW carries between 12,115 and 13,568 vehicles over its four travel lanes. Volumes in the two-lane section of the corridor west of Olympic View Drive are much lower, at approximately 3,600 to 4,000 vehicles per day. In general, three-lane roads (one lane per direction plus a center turn lane) can carry up to 24,000 vehicles per day,⁷ which indicates that the roadway may have space that can be repurposed for non-auto uses.

Figure 14 shows average daily traffic counts at several locations. The older set of data include 24-hour counts conducted by the city during a typical weekday from 2008-2016. In 2018, updated counts were collected by the city near 52nd Ave W and Meadowdale High School to ensure the most up-to-date information was used in this project. The 2018 data show that volumes have declined between count periods.

Figure 14 Average Daily Traffic on 168th by Location

| Location | Average Daily Traffic | Count Date | Average Daily Traffic | Count Date | % Change | Average Annual % Change |
|-----------------------------------|-----------------------|------------|-----------------------|------------|----------|-------------------------|
| Meadowdale Elementary School | 3,654 | Feb. 2012 | n/a | | | |
| 65 th Avenue W | 4,028 | Jun. 2012 | n/a | | | |
| 60 th Avenue W | 12,977 | Apr. 2016 | n/a | | | |
| Meadowdale High School | 12,392 | Oct. 2010 | 12,115 | Jan. 2018 | -2.2% | -0.32% |
| West of 52 nd Avenue W | 14,848 | Feb. 2008 | 13,568 | Jan. 2018 | -8.6% | -0.86% |

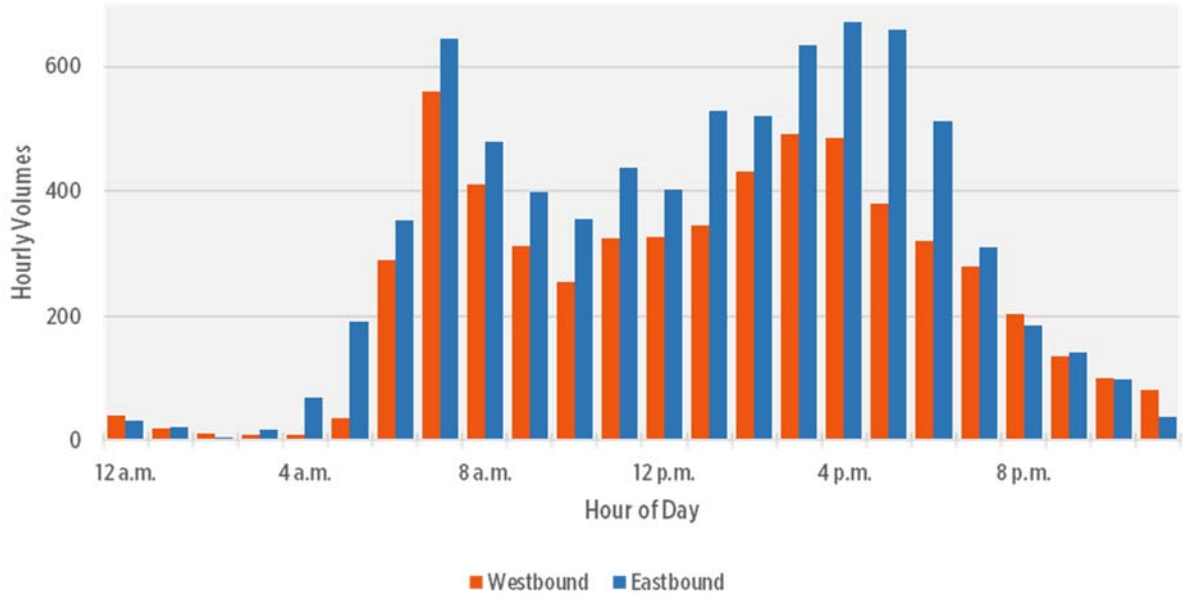
Source: City of Lynnwood

Typical morning and evening peak patterns are illustrated by the example at 52nd Avenue W shown in Figure 15. Generally, there is a sharper spike in volumes during the morning, and a more dispersed spike in the afternoon. At this and most other count locations, morning volumes are higher eastbound, while afternoon volumes are higher westbound. Figures showing hourly volumes at all count locations can be found in the Corridor Usage Memo.

⁷ FHWA, "Road Diet Informational Guide."
https://safety.fhwa.dot.gov/road_diets/guidance/info_guide/ch3.cfm#s335

Figure 15 Hourly ADT Volumes by Direction

Thursday Hourly Volumes by Direction 168th west of 52nd Avenue W — January 2018



Source: City of Lynnwood

Typical driving conditions along the corridor are illustrated in Figure 16.

Figure 16 Driving Conditions



Wide 15' curb lanes along the central corridor



168th Street SW passes through three school zones serving four schools



Peak traffic volumes along the corridor coincide with school arrival and dismissal



Typical street conditions east of Olympic View Drive have five travel lanes

SITE CIRCULATION

Circulation patterns were observed during the morning and afternoon bell times at Meadowdale Elementary and Middle Schools, Meadowdale High School, and Beverly Elementary School, in order to inform corridor needs and opportunities.

Access and circulation are challenging for all street users during student arrival and dismissal times. At Beverly Elementary School, safe access for students is impeded by high traffic volumes on both 52nd Avenue W and 168th Street SW, high turning volumes, many curb cuts at adjacent businesses with resulting conflicting turning movements, and limited access from the north for people walking and bicycling. At Meadowdale High School, long lines of vehicles queue up westbound to turn left into the parking lot, especially during morning arrival times. The length of the left turn queue is impeded by the median crossing island located just east of 60th Avenue W. This crossing island does not adequately serve all pedestrian demand to cross 168th Street SW, and people were observed crossing at unmarked locations across five traffic lanes in locations west of the school driveways. At Meadowdale Middle and Elementary Schools, vehicles back up during pickup and dropoff times.

Access for businesses near and around the intersection with SR 99, on the east end of the corridor, is complicated by numerous curb cuts located very near the intersections that create conflicting turning movements, long crossing distances for people walking, and high vehicle speeds along SR 99, which has a speed limit of 45 mph. These conditions lead many people who work near SR 99 to drive between locations that may be very close to one another, rather than walk a short trip on foot. For additional detail on site circulation, including diagrams of the issues outlined above, see Chapter 6 of the Corridor Usage Memo.

4 COMMUNITY INPUT

A successful plan requires input from those who are most familiar with an area. The project engaged the community through a combination of one-on-one interviews and community workshops, as described below.

STAKEHOLDER INTERVIEWS

Project staff spoke with several key stakeholders along the corridor in December 2017, including school staff, transportation advocates, and business owners. A summary of stakeholder comments is shown below.

Walking

- More safe, marked crossings are needed, especially on the central and eastern portions of the corridor. Students jaywalk because of a lack of safe crossings.
- Crossing times are inadequate at signalized intersections.
- Streets and pedestrian facilities are not adequately designed in school zones to safely accommodate pickup/dropoff activity as well as students walking and bicycling.
- Parents drive their kids to school because they feel that walking or bicycling is unsafe.
- Walking to and among locations around SR 99 and 168th Street SW is especially unpleasant and unsafe, leading people to drive even short distances between destinations.
- Better separation between the sidewalk and curb lane along 168th Street SW is needed for comfort and safety of both pedestrians and drivers.

Bicycling

- People do not feel safe riding without dedicated lanes or separated facilities.
- Many intersections need improvements to make bicycling feel safer, such as longer signal phases, clear lane markings through intersections, and physical indications that bicyclists belong on the street.
- Circulation could be improved at some locations such as Meadowdale Middle School by opening or creating gates, to allow natural movement separate from street corridors.

Transit

- Improving access to transit stops on SR 99 should be a priority. Some students rely on Swift BRT to get to and from schools that are farther west on the corridor.

Driving

- School traffic and school buses are perceived to bog down other vehicular traffic.
- Education efforts could help increase driver awareness of kids on the streets, and help understand how all can use the street more safely.
- Circulation issues around Meadowdale High School:
 - Refuge islands impede turning movements
 - Traffic should be one-way in and one-way out – one entrance and one exit for parking lot and driveway
- Two general purpose lanes in each direction are seen as very helpful, especially during busy school hours.
- Access to and from adjacent neighborhoods is difficult during school arrival and dismissal times.
- Morning high school arrival rush from 7:08 a.m. to 7:20 a.m. is chaotic and considered unsafe because there are too many things for drivers to pay attention to.
- Parents driving children to and from school perceive other parents as driving aggressively and creating competition for queue space, and worry that someone is going to run over their children.
- During school zone speed restriction times along the central corridor, drivers exceed the speed limit and exhibit other unsafe behavior such as tailgating and aggressive passing.
- Outside of school zone speed restriction times, particularly during late afternoon rush hours (4:30 p.m. to 6 p.m.) drivers tend to exceed the speed limit. Although schools are closed, parents of children in daycare are still coming to pick up young kids during those times.
- Traffic calming components could be very helpful in the school zones.

General

- There is a good amount of space in the street, which means potential for change.
- The street would benefit from some planter boxes and other amenities to beautify the streetscape and instill a greater sense of pride in the place.
- 168th Street SW is a great street for connecting important destinations.
- On the west end of the corridor, the street has nice views and a pleasant feel.

WALKSHOP

In mid-December 2017, the project team conducted an evening workshop including local stakeholders and city employees at Beverly Elementary School. The workshop consisted of three main elements:

- Walking corridor tour
- Debrief on positive and negative experiences from walking tour
- Corridor redesign and presentation of ideas

Following the walking tour, participants shared the following changes that they felt could improve 168th Street SW:

Crossing the street

- At least one additional improved crossing along the corridor

Traveling along the street

- Install wider and better sidewalks, or consider a separated path
- Bicycle wayfinding and facilities in the street or on the sidewalks
- Install bicycle infrastructure – consider a raised, protected bicycle lane; take the space from the wide curb lane
- Install curbs and sidewalks on the west side of 52nd Avenue north of Beverly Elementary
- Physical infrastructure protection in the street around high school and middle schools to make it comfortable to bicycle on street or sidewalk

Safety and other themes

- Increase auto enforcement; police are perceived to only enforce speed, but not other dangerous behavior such as cutting corners
- Automated traffic camera should be active at all times; when people see flashes they will self-regulate
- Better speed and school signage at 168th Street and 52nd Avenue (Beverly Elementary School)– consider flashing speed warning signs and school zone flashers
- Lower speed limit to 25 mph
- Bus stops need shelters, and should be located closer to crosswalks
- Narrow the road to discourage speeding
- Visibility, signage, and alignment improvements at 168th Street and Olympic View Drive

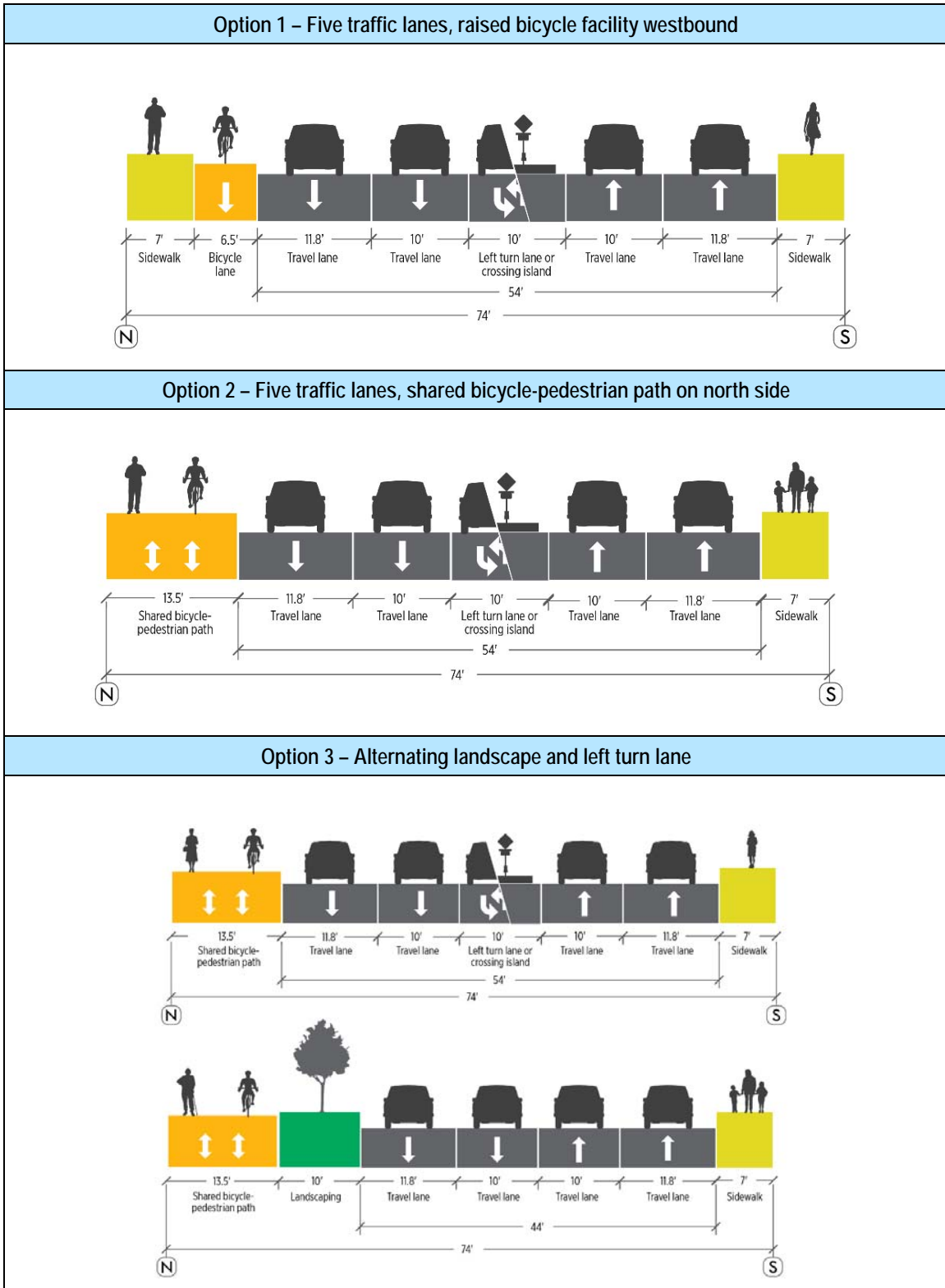
Following the group discussion and a presentation on multimodal street design from the project team, workshop participants gathered around tables to brainstorm potential design alternatives for the corridor, within the parameters of the current 74-foot corridor cross-section. Design concepts generated by the participants included:

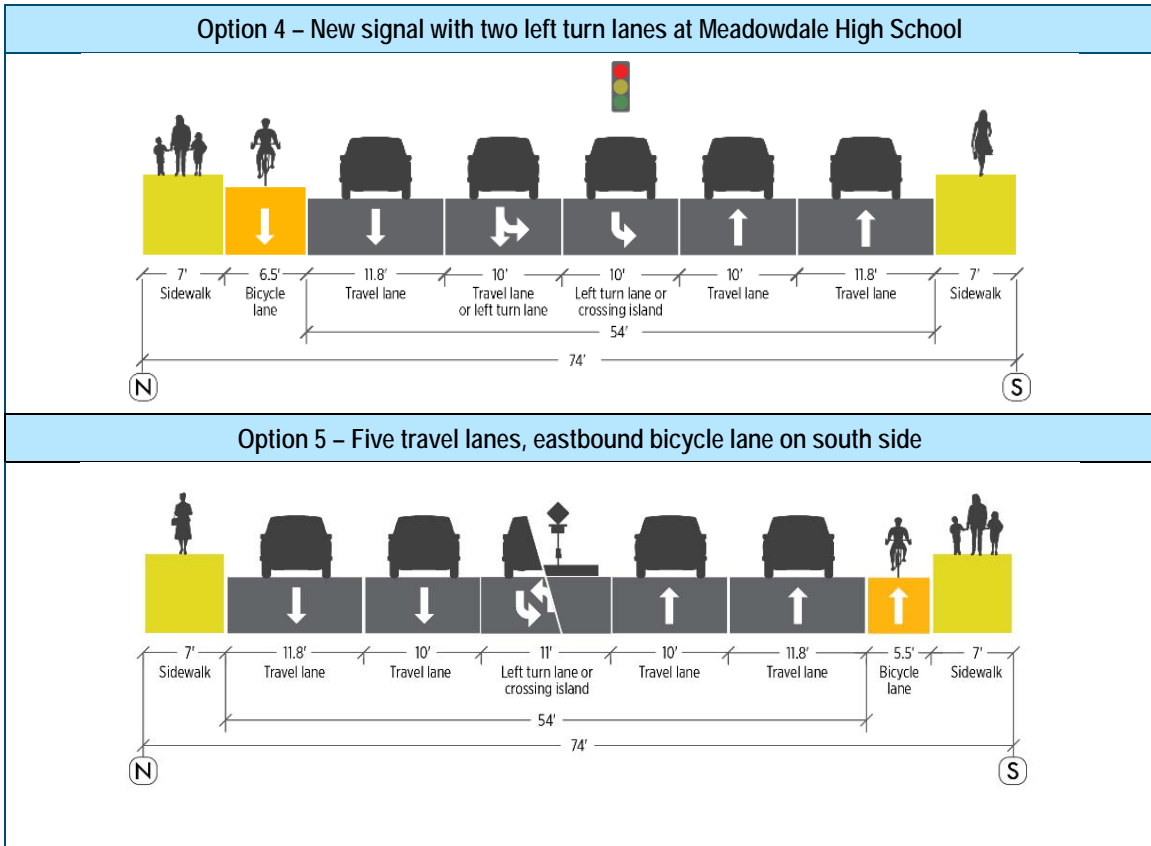
- Five travel lanes, with a one-way bicycle facility on the north side at sidewalk level
- Removing the center two-way left turn lane, maintaining four travel lanes, and building 5-foot protected bicycle lanes in each direction
- Four travel lanes, and 15-foot multi-use paths on each side of the street
- A 5-lane to 3-lane road diet conversion, with a wide linear park on the north side featuring landscaping and bicycle facilities

OPEN HOUSE

Based on stakeholder input, ideas generated by workshop participants, and data and analysis from the existing conditions memo, the project team developed five corridor design concepts and school-specific safety improvement projects for presentation at a community open house in February 2018. The corridor concepts are shown in Figure 17. School-specific safety improvement projects are presented in Chapter 5.

Figure 17 Corridor Concepts





Open House Feedback

Community members expressed by far the most support for corridor options 2 and 3. People liked the landscaping shown in Option 3 and the idea of separation between the path and vehicle traffic. Yet there was also opposition to Option 3 –many of the concerns related to people believing the option removed the turn lane (in actuality, the option only removes the turn lane in limited areas). People also were enthusiastic for a traffic signal at the high school.

Overall, the following design elements and operational policies resonated with people:

- Preserve two-way left turn lane
- Preserve four through traffic lanes
- Construct shared-use path on south side
- Add crossings with pedestrian refuge islands
- Add signal at high school that operates as a flashing yellow when vehicles are not present
- One school zone rather than two separate school zones with consistent signage and enforcement
- Reduce speed limit to 25 mph
- Complete the sidewalk connection along the west side of 52nd Ave W north of Beverly Elementary

- Improve the intersection of 52nd Avenue W and 168th Street SW to increase pedestrian safety by slowing turning vehicles and increasing vehicular yielding to crossing pedestrians
- Improve access and circulation at Meadowdale High School, including one-way vehicular circulation in the parking lot, and relocating the pedestrian crossing island to allow for more left-turning vehicle queueing space, and adding traffic signal at 60th Avenue W that operates as a flashing yellow when vehicles are not present

Additional feedback from open house participants touched on the lack of sufficient lighting along the corridor, particularly west of Olympic View Drive, and at key crossings along the central corridor.

Several members of the community voiced concerns over the design of the intersection of Olympic View Drive/168th Street SW/62nd Avenue W/63rd Avenue W. Residents described concerns related to turning onto 168th Street SW from streets north of the corridor in this location. Sight distances are limited from these intersecting streets, and westbound drivers tend to make high speed right turns to continue westbound on 168th Street SW. Open house attendees suggested that a traffic signal may be needed at 62nd Avenue W, given the importance of this street for residents north of 168th Street SW, whose neighborhood features limited street connectivity. Other concerns at the Olympic View Drive intersection include abrupt lane changes, insufficient signage and lane markings, and tight turns for buses traveling to and from Meadowdale Elementary and Middle schools. Changes at these intersections may not be within the scope of this project, but this area is clearly a concern for the neighborhood, and the City may consider further study of this intersection.

SCHOOL DISTRICT MEETINGS

The project team met with Edmonds School District administrators and staff from both Meadowdale High School and Beverly Elementary to review the school-specific safety improvements in mid-March 2018. The purpose of these meetings was to confirm the safety improvements projects the City of Lynnwood will include in the April 2018 Safe Routes to School (SRTS) grant application. Short-term improvements within the scope of the SRTS program were identified for Meadowdale High School and Beverly Elementary School (as detailed in Chapter 5). These projects will comprise a SRTS grant application for each school. Long-term improvements were identified for Meadowdale Middle School and Elementary at the western end of the 168th Street SW corridor. The City will continue to work with the Edmonds School District to study the feasibility and implementation of long-term improvements.

Edmonds School District, Meadowdale High School, and Beverly Elementary staff were supportive of the following school-specific safety improvements and programs:

- Partnership between the school district, teachers and school staff, the City of Lynnwood, and the Lynnwood Police Department to deploy a coordinated safe walking and bicycling education program at each school.
- Establishing a consistent school zone with improved signage between Beverly Elementary and Meadowdale High School.
- Completing the missing sidewalk link along the west side of 52nd Avenue W north of Beverly Elementary.
- Installing a new pedestrian crossing island and crosswalk across 168th Street SW connecting to the New Beginning Church parking lot for parents to park and cross to pick

- up or drop off students. Beverly Elementary staff confirmed this would be a more attractive option than improvements across 52nd Avenue W near Avanti Pizza.
- Studying and partnering to implement access and circulation improvements at Meadowdale High School. Edmonds School District and Meadowdale High School staff expressed a willingness to implement capital improvements in the parking lot and along the fire lane in coordination with City of Lynnwood improvements along 168th Street SW.

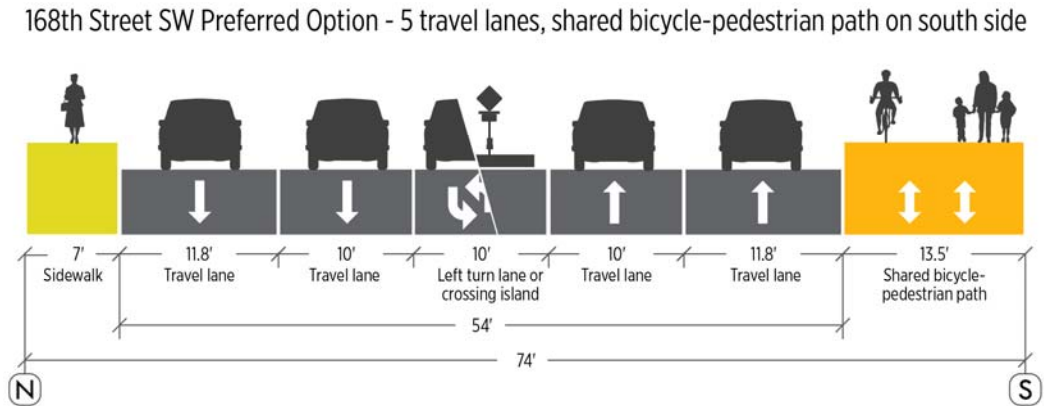
5 RECOMMENDATIONS

Based on community and stakeholder feedback and analysis of existing conditions, solutions were created that address issues both from a corridor-wide perspective as well as from a site-specific perspective. The intent is for the short-term projects to be included in the City of Lynnwood’s 2018 Safe Routes to School grant application, therefore the short term projects focus heavily upon the four school sites along 168th Street SW.

LONG-TERM VISION FOR 168TH STREET SW

The project team drafted a preferred design concept for the 168th Street SW corridor based on community input that balances the need to increase safety and mobility for people walking and bicycling with the need to maintain street capacity to carry peak traffic volumes during school arrival and dismissal times. The concept proposes a cross section with four travel lanes, a center two-way left turn lane alternating with median crossing islands where crossings are needed, and a shared-use bicycle and pedestrian path along the south side of the street (Figure 17). The south side was preferred by the community due to more destinations being located along this side of the street. The curb lanes measure 11.8 feet to accommodate Community Transit vehicles. The design is applicable to the central portion of the corridor, stretching from Olympic View Drive east to SR 99, a distance of just over one mile.

Figure 18 168th Street SW Preferred Corridor Design Concept, Olympic View Drive to SR 99



During this project, the team focused on design solutions from Olympic View Drive to SR 99; however, in the long term a bicycle connection along 168th Street SW crossing SR 99 and connecting to 44th Avenue is optimal. 44th Avenue has existing bicycle lanes, and will also be the bicycle route to Lynnwood’s future Link light rail station.

The benefits and considerations for this preferred corridor design are presented in Figure 19 by mode and topic.

Figure 19 Benefits and Considerations by Mode and Topic for Preferred Corridor Concept

| Travel Mode or Topic | Benefits | Considerations |
|----------------------|---|---|
| Pedestrians | <ul style="list-style-type: none"> ▪ Offers additional marked opportunities to cross 168th Street SW ▪ Widens south sidewalk | <ul style="list-style-type: none"> ▪ Creates potential conflicts with bicyclists in the shared path space |
| Bicyclists | <ul style="list-style-type: none"> ▪ Creates dedicated bi-directional facility ▪ Bicycle lanes would be routed behind bus stops to reduce conflicts in the street ▪ Physical separation from vehicular traffic may encourage children and family use | <ul style="list-style-type: none"> ▪ Facility on south side of street only; those accessing destinations on the north side must cross the street ▪ Bicyclists riding westbound ride directly adjacent to vehicle traffic ▪ Driveway markings will increase awareness of potential conflicts with turning drivers |
| Transit Riders | <ul style="list-style-type: none"> ▪ Eastbound bus stops remain at curb, with bicycle lane behind ▪ Westbound stops unaffected | <ul style="list-style-type: none"> ▪ Creates potential conflict points when transit riders board and alight in path space |
| Placemaking | <ul style="list-style-type: none"> ▪ Offers opportunity for creative pavement treatments and public art on shared bicycle-pedestrian path ▪ Opportunity to add landscaping when crossing islands are added | <ul style="list-style-type: none"> ▪ Adds to maintenance costs |
| Drivers | <ul style="list-style-type: none"> ▪ Narrower curb lanes can reduce traffic speeds ▪ No loss of street capacity | <ul style="list-style-type: none"> ▪ Requires more vigilance of high speed travelers that bicyclists may be riding on sidewalk in either direction of travel |

Design Guidance

Paths

The preferred design concept for the 168th Street SW corridor includes a path along the south side of the street intended for bi-directional use by both people walking and bicycling. The American Association of State Highway and Transportation Officials (AASHTO) *Guide for the Development of Bicycle Facilities* defines a shared-use path as a facility that is physically separated from motorized vehicle traffic by an open space or barrier and is either within the right-of-way or within an independent right-of-way. AASHTO recommends the minimum width for a two-directional shared-use path as 10 feet.⁸ Snohomish and King Counties are home to several shared-use paths including the Centennial, Interurban, and Burke Gilman Trails. While these local shared-use paths operate mostly within their own independent right-of-way, shared-use paths can also operate within existing rights-of-way adjacent to traffic. Shared-use paths adjacent to roadways are called sidepaths. Design best practice includes a buffer between the sidepath and the adjacent roadway and traffic. Buffers can be landscaping and plantings, or physical barriers, such as a railing. A variety of sidepath design treatments is shown in Figure 20.

⁸ AASHTO *Guide for the Development of Bicycle Facilities, Fourth Edition* (2012): https://bookstore.transportation.org/collection_detail.aspx?ID=116

Figure 20 Sidepath Design Treatments



On East Arapahoe Avenue in Boulder, CO, pedestrians and bicyclists share a wide sidewalk. In some areas, a stamped and colored concrete buffer marks a warning strip adjacent to the street.

Source: Nelson\Nygaard



Boulder, CO: The space is signed as a shared-use path, with wayfinding and instructional signage for people bicycling and walking, including bi-directional signage for bicycling.

Source: Nelson\Nygaard



Boulder, CO: Pedestrians and bicyclists both use crosswalks. This raised, colored crosswalk provides clear indication of a crossing to right-turning drivers

Source: Nelson\Nygaard



Boulder, CO: A planted strip buffers the shared-use path from adjacent traffic lanes.

Source: Nelson\Nygaard

The 168th Street SW preferred design concept proposes adding 6.5 feet to the current 7 foot-wide southern sidewalk to create a 13.5 foot-wide sidepath at current sidewalk height. The space for the path is achieved by narrowing each curb lane by 3 feet. Per AASHTO guidance, the sidepath must measure at least 10 feet. The remaining 3.5 feet is not wide enough to provide a landscaped buffer between path users and adjacent traffic. Alternative design treatments could be utilized to create a physical or visual barrier to separate trail users from the roadway and adjacent traffic. Textured paving or railings could be installed to provide a greater level of separation (whether visual and/or physical) of path users from the roadway. It should be noted that physical barriers along a

sidepath can impair visibility between roadway and path users, and should be implemented thoughtfully to maintain clear sightlines at intersections and driveways.

Additional undeveloped right-of-way exists behind the existing outer edge of the sidewalk along both sides of 168th Street SW. The current cross-section of 168th Street SW from back of sidewalk on both sides measures 74 feet; however, the city owns 80-90 feet of right-of-way. Additional right-of-way behind the current outer edge of the sidewalk could be used to expand the 168th Street sidepath to provide more space and/or separation for people walking and bicycling in the very long term.

Intersections and driveway crossings are another important consideration for bi-directional sidepaths. Intersection treatments such as signage, crossing markings, and/or maintaining the raised path height at driveways or street crossings alert drivers to the possible presence of path users. Examples of intersection treatments are shown in Figure 21. There are approximately 30 driveways located along the south side of 168th Street SW between Olympic View Drive and SR 99, in addition to four street intersections.

Figure 21 Path Intersection Treatments



Portland, OR: Sidepath at sidewalk level across driveway plus yield signage for drivers entering the driveway.

Source: Google Streetview



Indianapolis, IN: High visibility pavement treatments that differ from the rest of the path clearly mark locations where a shared-use path intersects driveways.

Source: NelsonNygaard



Boulder, CO: There is ample queuing space at intersections to accommodate high volumes of bicycle and pedestrian traffic on the sidepath.

Source: NelsonNygaard



Boulder, CO: Push buttons to request crossing signals are clearly marked and are placed at comfortable heights for both bicyclists and pedestrians.

Source: NelsonNygaard

Within the City of Lynnwood, an example of a sidepath exists at 208th Street, where the Interurban Trail uses a street connection (Figure 22).

Figure 22 Interurban Trail Sidepath and Crossing at 208th Street SW, Lynnwood, WA



A segment of the Interurban Trail in Lynnwood becomes a sidepath as it approaches and crosses 208th Street SW at 54th Ave W. Street crossings are marked with high visibility treatments.

Source: GoogleMaps and MIG|SvR

Pedestrian Crossings

During the walkshop, many community members expressed a desire for additional crossing opportunities along the corridor. Participants liked the design of existing crossings, such as the location at Meadowdale High School. People said that additional crossings designed in a similar fashion would be acceptable. The preferred 168th Street SW concept alternates the two-way left turn lane with median crossing islands where needed, which opens up opportunities for placement of new similar crossings.

In terms of desired spacing of crossings, guidance varies between jurisdictions and agencies. The Institute of Transportation Engineers (ITE) recommends that walkable thoroughfares have safe pedestrian crossings every 200-600 feet.⁹ The City of Denver established guidelines on

⁹ ITE *Designing Walkable Urban Thoroughfares* (2010) <http://library.ite.org/pub/e1cff43c-2354-d714-51d9-d82b39d4dbad>

uncontrolled pedestrian crossings spacing of 300 feet or greater.¹⁰ For marked, uncontrolled pedestrian crossings the Manual on Uniform Traffic Control Devices (MUTCD) does not prescribe spacing, but instead recommends using engineering judgment.¹¹

The project team responded to community feedback by identifying three locations along 168th Street SW suitable for new pedestrian crossings. Marked pedestrian crossings currently exist along the corridor (from west to east) at Olympic View Drive, 60th Avenue W (Meadowdale High School), 57th Place W (Meadowdale Neighborhood Park), 52nd Avenue W (Beverly Elementary School), 48th Avenue W, and SR 99. New crossings to add include:

- Between 57th Place W and 52nd Avenue W (1,900 feet between existing crossings). New crossing at:
 - 56th Ave W, a street connecting to residential neighborhoods both north and south of the corridor
- Between 52nd Avenue W and 48th Avenue W (1,325 feet between existing crossings). New crossing at:
 - Near the Meadowdale Apartments driveway, a multifamily housing complex

Since the 168th Street SW concept maintains a 10-foot wide center turn lane, median crossing islands could be installed in place of the center turn lane at these locations to create a two-stage pedestrian crossing. Median crossing islands reduce the amount of time people are exposed to traffic by shortening crossing distance and giving pedestrians a place to wait for an opportunity to cross the second half of the street. The National Association of City Transportation Officials (NACTO) *Urban Street Design Guide* recommends pedestrian median crossing islands ideally be 40 feet long.¹² A median island 10 feet in width and 40 feet in length provides space for trees and landscaping, providing an opportunity to add greenery to the 168th Street SW corridor. Examples of median crossing islands incorporating greenery are shown in Figure 23.

¹⁰ City and County of Denver *Uncontrolled Pedestrian Crossing Guidelines* (2016)
<https://www.denvergov.org/content/dam/denvergov/Portals/Transportation-Mobility/documents/CCD-uncontrolled-pedestrian-crossing-guidelines-2016.pdf>

¹¹ MUTCD *Chapter 4C. Traffic Control Signal Needs Studies* (2009)
<https://mutcd.fhwa.dot.gov/hlm/2009/part4/part4c.htm>

¹² NACTO *Urban Street Design Guide* (2013) <https://nacto.org/publication/urban-street-design-guide/intersection-design-elements/crosswalks-and-crossings/pedestrian-safety-islands/>

Figure 23 Median Crossing Island Design Treatments



Asheville, NC: Median crossing islands can offer opportunities to add vegetation to the streetscape.

Source: NACTO



This median crossing island is clearly marked with contrasting pavement, and is planted with low vegetation that does not obstruct sightlines.

Source: Dan Burden, pedbikeimages.org

Capital Cost

The preferred concept has a minimum capital cost of \$915,000, using national and local unit cost examples. Major assumptions in capital costing included:

- **Path as extension of existing sidewalk.** The existing sidewalk along the south side of 168th Street SW is in good condition. Cost estimates assume that sidewalk will be extended, as in Figure 24 from San Francisco, in which a bus bulb was added to the existing sidewalk.

Figure 24 Sidewalk Extension



Source: Nelson\Nygaard

- **Project extent.** Cost covers the study area from Olympic View Drive to SR 99.
- **No utility relocation.** Utility poles along the corridor are all located behind the sidewalk, which reduces the overall project cost by negating the need to relocate electric utilities, a common line item cost in many similar projects.

- **No storm drain relocation.** Given the conceptual nature of the preferred concept, the team did not delve into this level of detail on drainage needs.

The major components of the project cost include building new curb and gutter segments, building new sidewalk, and installing median crossing islands with flashing beacons. A detailed list of project costs is shown in Figure 25. Cost estimates are drawn from local and regional municipal project line items where possible, and are adjusted to 2018 prices. Given the number of assumptions and unknowns in figuring costs for the preferred design concept, each item cost below includes a 60% markup for contingency.

Figure 25 Cost Detail for Preferred Corridor Design Concept

| Item | Unit Cost | Item Cost (2018) | Source |
|---|-----------------------|------------------|---|
| Segment length: 5,421 feet, excluding five intersections | | | |
| Remove curb and gutter | \$10 per linear foot | \$91,000 | WSDOT |
| Build curb and gutter | \$26 per linear foot | \$238,000 | City of Tacoma – Project line item cost |
| Build sidewalk | \$37 per square yard | \$241,000 | City of Tacoma – Project line item cost |
| Install ADA ramp | \$3,500 per ramp | \$47,000 | WSDOT and City of Seattle |
| Install median crossing island, two ADA curb ramps, high visibility crosswalk, and flashing beacons | \$66,600 per location | \$224,000 | Nelson\Nygaard cost database: Installation on Oregon suburban 5-lane arterial |
| Grind out existing striping | \$1 per linear foot | \$37,000 | Nelson\Nygaard cost database: National average |
| Re-stripe roadway | \$1 per linear foot | \$37,000 | Nelson\Nygaard cost database: National average |
| Total project cost | | \$915,000 | |

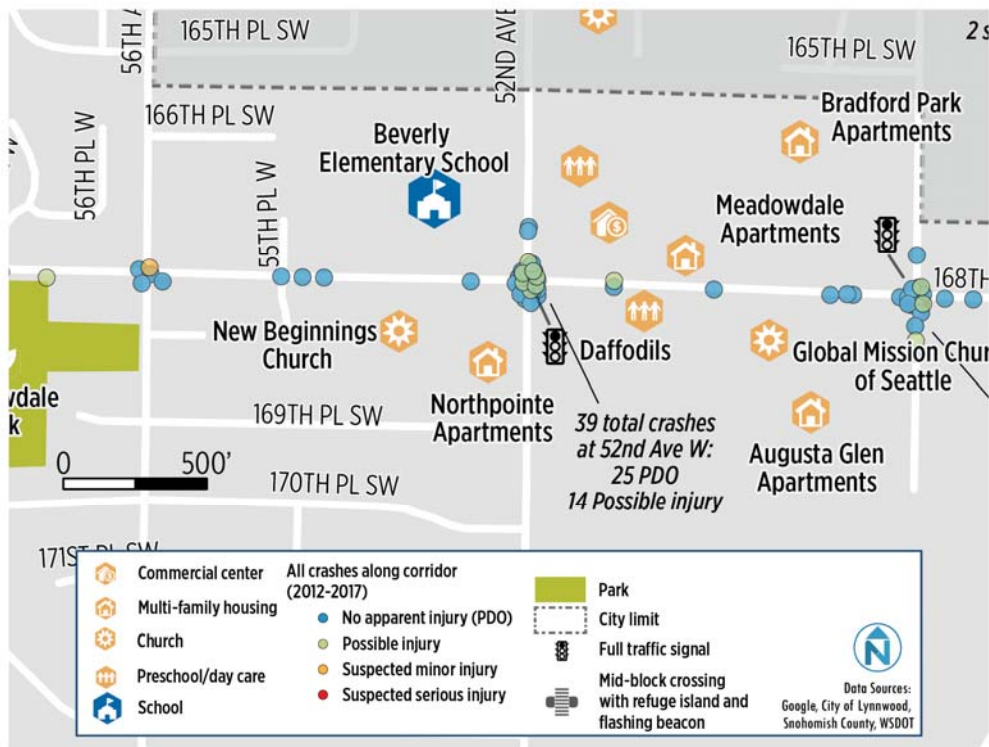
Note: Project extends from Olympic View Drive to Hwy 99, south side of 168th Street SW only. Install midblock crossing with flashing beacons at/near intersections of 168th Street SW and: 56th Avenue W; and Meadowdale Apartments (east of 52nd Ave W). Estimate does not include storm drain relocation or utility construction. Item cost estimates include 60% contingency markup. ADA ramps assumed at all public streets. Estimate assumes road regrade not needed.

SITE-SPECIFIC PROJECTS

Beverly Elementary School

High vehicle speeds, multiple pedestrian-involved crashes, school-related congestion, and few places to cross the street were top issues cited by Beverly Elementary stakeholders. The crossing of the 52nd Avenue was cited in particular as a safety concern due to high-speed turning drivers combined with high volumes of students using the intersection. School officials felt that more students would walk or bicycle to school, but the west sidewalk on 52nd Avenue ends 1,200 feet north of the school at 164th Place. Fortunately, actions have already been taken to make Beverly Elementary safer for access. The City of Lynnwood installed a Leading Pedestrian Interval at the signal at 52nd Avenue, which starts the WALK time three seconds before the vehicle green time and allows people using the crosswalk a head start over turning drivers. Snohomish County also plans to apply for a Safe Routes to School grant to fill in the missing sidewalk gap on 52nd Avenue north of the school site. Figure 26 and Figure 27 detail the overall collision history and locations of collisions that involved people walking or biking. Between 2012 and 2017, 39 collisions have occurred at the intersection of 52nd Avenue W and 168th Street SW, of which three involved pedestrians. Figure 28 shows the average vehicular speeds in the vicinity of Beverly Elementary School.

Figure 26 Beverly Elementary School Crash Detail, 2012-2017



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Figure 27 Crashes at Beverly Elementary School Involving People Walking or Bicycling

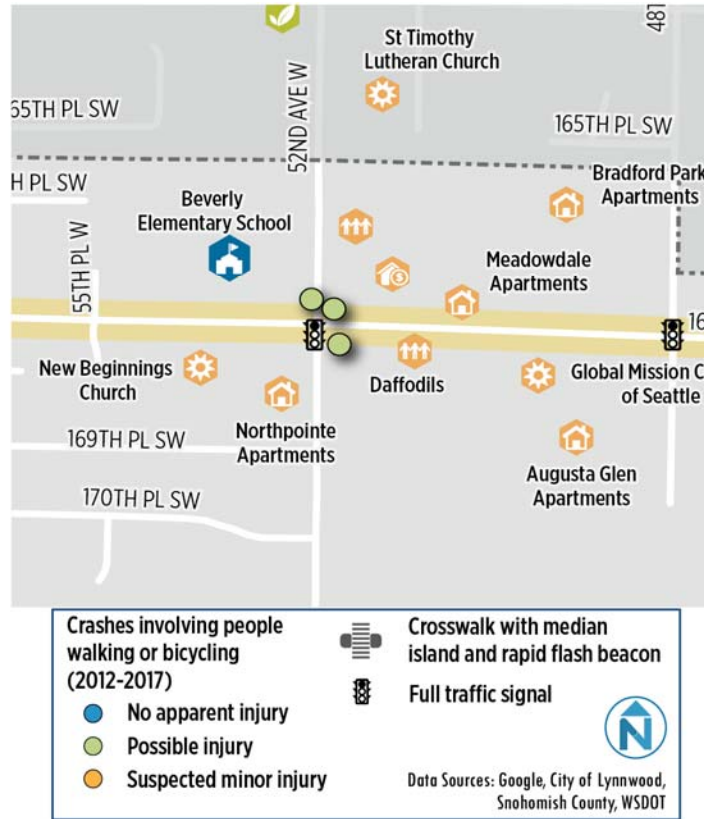
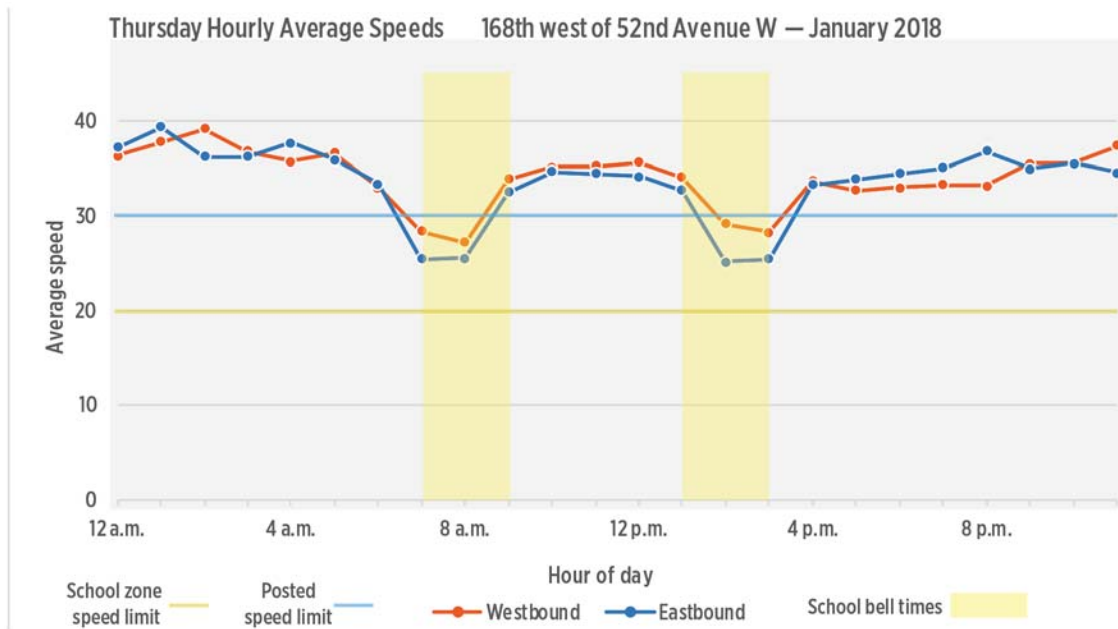


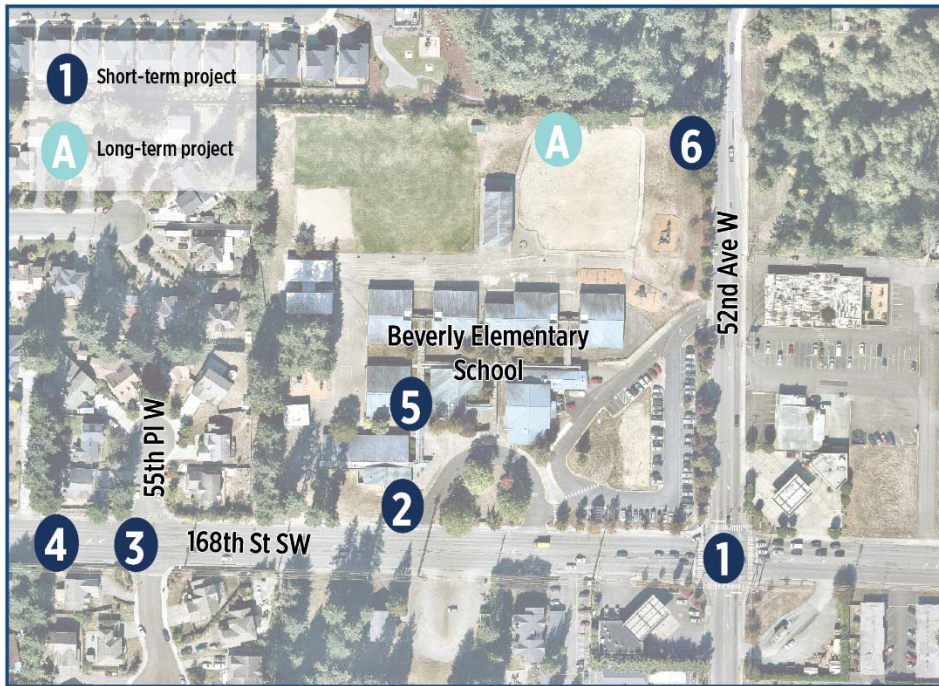
Figure 28 Vehicle Speeds near Beverly Elementary School



Source: City of Lynnwood

The following short- and long-term projects were identified through community input and confirmed by stakeholders including Beverly Elementary and Edmonds School District staff. The City of Lynnwood's April 2018 Safe Routes to School grant application for Beverly Elementary will consist of the short-term project list. Project details and capital cost estimates for all projects at all schools are described in Figure 48 at the end of this chapter.

Figure 29 Locations of Proposed Projects at Beverly Elementary School



Beverly Elementary School Short-Term Project List

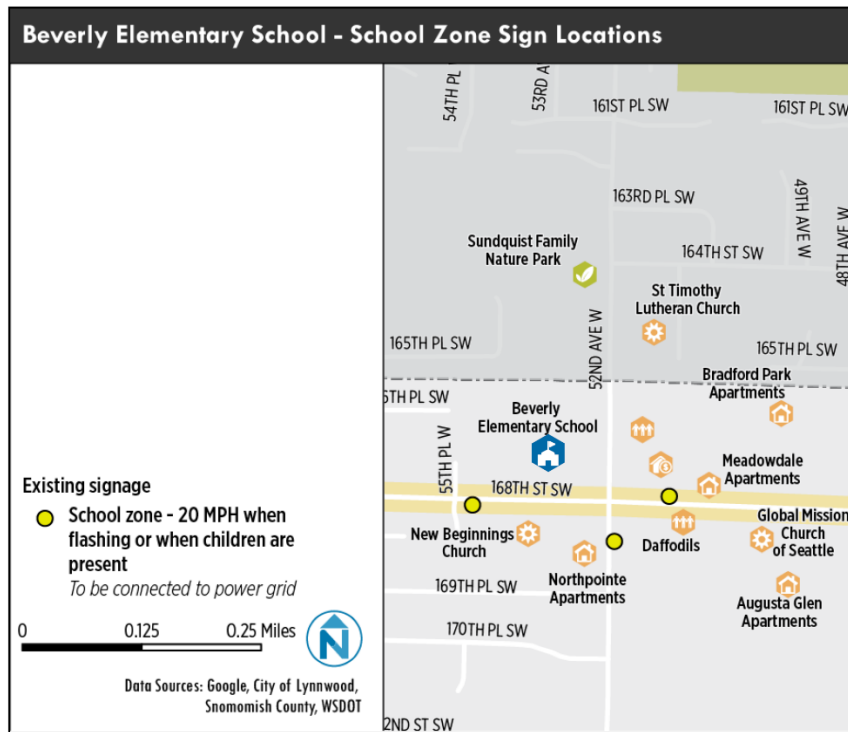
1. Install School Zone Signage on Mast-Arms: Visually call attention to school zone and school zone speed limit through signage on the vertical signal mast arms at 52nd Avenue W and 168th Street SW. Extinguishable signs would be illuminated during active school zone times: one hour before the earliest school arrival time to a half hour after latest arrival time, and one hour before the earliest dismissal time through a half hour after latest dismissal time along the 168th Street SW corridor.
2. Photo Speed Enforcement: Enforce school zone speed limit with photo enforcement system. Install a power drop to enable future installation of a speed enforcement camera just west of the Beverly Elementary School driveway.
3. School Zone Speed Limit Signs: Upgrade existing flashing school zone signs (3 total) by installing power drops to connect to the electric grid ensuring consistent operation year round. The current signs depend on solar power (Figure 30 **Error! Reference source not found.**), and lack of sunlight in winter months means the signs do not always flash. This has also presented an issue in terms of enforcement, as drivers cited for speeding can argue that the school zone signs were not flashing at the time of the citation. See Figure 32 for locations of current solar-powered flashing school zone signs.

Figure 30 Existing Solar-Powered Flashing School Zone signs state “Speed Limit 20 mph when crosswalk lights flash or children are present”



Source: GoogleMaps

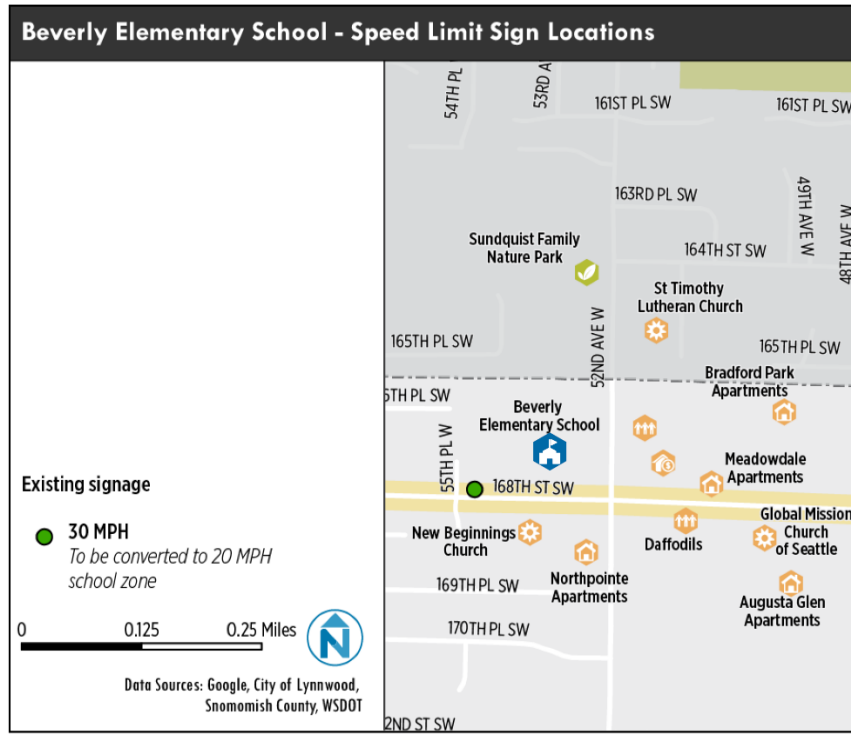
Figure 31 School Zone Sign Locations at Beverly Elementary School



4. Consolidated School Zone: Consolidate the three school zones along 168th Street SW into one continuous school zone. Existing school zones extend 330 feet from a marked school crosswalk; however, the posted speed goes from 20 mph back up to 30 mph for short stretches between the school zones. Drivers and school staff supported one school zone for legibility and safety. Many students were observed walking the length of 168th Street

SW, outside of the school zone areas. Creating one continuous school zone would affect 975 feet between Beverly Elementary and Meadowdale High School and 1,000 feet between Meadowdale High School and Meadowdale Middle and Elementary Schools. At Beverly Elementary, it would require converting one 30 mph speed limit sign to a 20 mph school zone sign (see Figure 32 for the location of existing 30 mph signage to be converted). While the standard for establishing school zones states that “a school zone may extend by traffic regulation beyond 330 feet based on a traffic and engineering investigation,” this project may require City Council action.

Figure 32 Locations of Existing and 30 mph Signage at Beverly Elementary School



5. Education: To maximize the effectiveness of the new safety improvements, students and families will be made aware of and educated on safe travel behavior, and the positive health effects of walking and bicycling to school. The City of Lynnwood, the Edmonds School District, and the Lynnwood Police Department will work together to deploy the following education strategies at Beverly Elementary School:
 - Staff from the City of Lynnwood Public Works and Engineering Services division and the Lynnwood Police Department will partner with the Edmonds School District to implement the district’s Safe Walking Program by creating, printing, and distributing safety education materials, and participating in an annual program or assembly teaching students about safe travel behavior, and how streets and signals are designed for safety.
 - Beverly Elementary participates in Cascade Bicycle Club’s Let’s Go/Basics of Bicycling annual bicycle education program for students grades 3-6 and Beverly’s physical education (P.E.) teacher leads a unit on safe walking and bicycling in coordination with the Let’s Go program. Beverly’s 2019 Safe Routes to School

education strategies will complement and leverage these established programs at Beverly Elementary.

- Mr. Tom Davis, the Beverly Elementary P.E. teacher, has advised on and participated in the development of the Beverly Safe Routes to School improvements. In addition to leading an annual unit on safe walking and bicycling, he has requested support on implementing walking school buses and developing Beverly’s Walk and Bike to School Day celebration. Edmonds School District, the City of Lynnwood, and the Lynnwood Police Department will partner to support safe walking and bicycling education around Walk and Bike to School Day in May 2019.
6. North school site access: Formalize the path from the sidewalk on 52nd Avenue W through the gate at the northeast corner of the Beverly Elementary school site. Unlock the gate to allow student access during arrival and dismissal times. The majority of Beverly Elementary’s student catchment is to the north of the school. Students walking to school along 52nd Avenue W from neighborhoods north of Beverly Elementary would benefit from having a convenient access point to the school from the north.

Beverly Elementary School Long-Term Project List

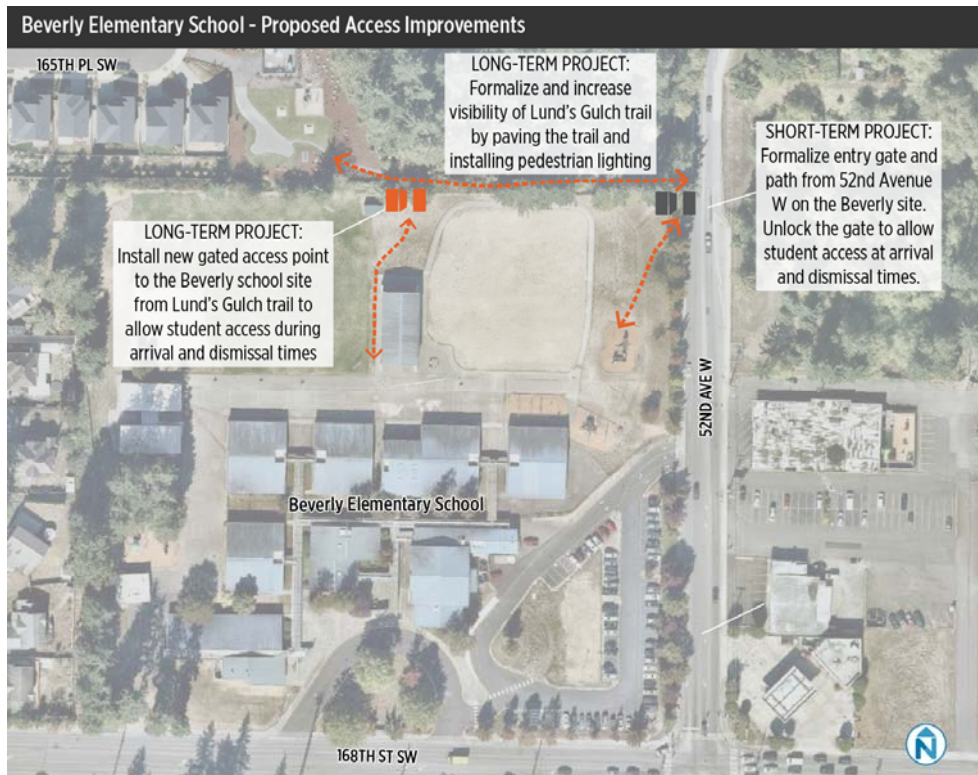
Beverly Elementary is under consideration to receive funding from the 2020 Edmonds School District bond measure for site reconstruction. At this point, no specific plans have been developed; however, the long-term projects listed below could be packaged into the funding measure. Figure 34 shows future access improvements.

- A. Access from Lund’s Gulch: Formalize and actively manage Lund’s Gulch Creek trail to increase visibility and provide student access to Beverly Elementary from the north. Improvements could include paving the trail, installing lighting, and creating another gated access point to the school site along the north edge of the Beverly Elementary site. The trail passes through Sundquist Family Nature Park, which is owned by Snohomish County. Edmonds School District could explore options for future development of this north access option in partnership with Snohomish County.

Figure 33 Existing Path through Lund’s Gulch, North Side of Beverly Elementary School



Figure 34 Beverly Elementary Short- and Long-Term Access Improvements



Meadowdale High School

Throughout the 168th Street SW Corridor Planning Study, stakeholders have expressed a desire for improvements to reduce congestion during school arrival and dismissal times and increase the safety and visibility of students crossing 168th Street SW. Figure 35 and Figure 36 detail the overall collision history and locations of collisions that involved people walking or biking. Between 2012 and 2017, five people walking and bicycling near Meadowdale High School were involved in collisions with cars. Figure 37 shows the average vehicular speeds in the vicinity of Meadowdale High School.

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Figure 35 Crash Detail near Meadowdale High School, 2012-2017



Figure 36 Crashes Involving People Walking or Bicycling at Meadowdale High School

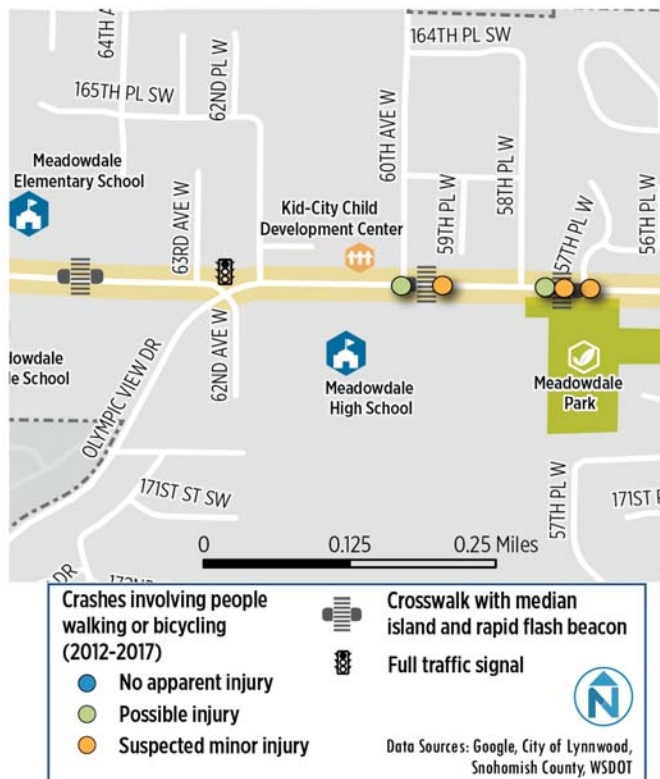
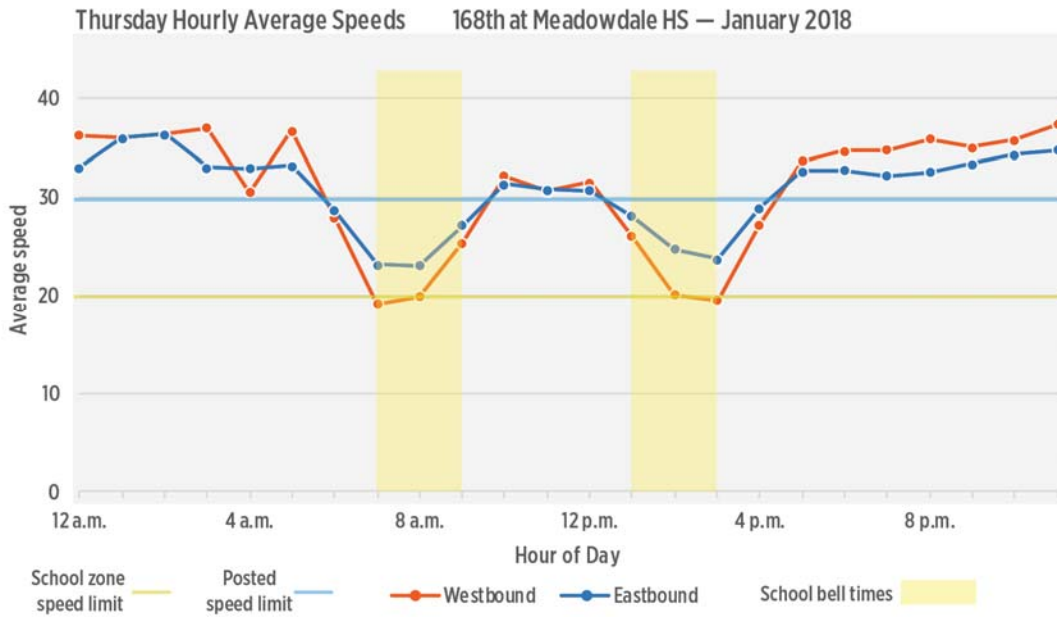


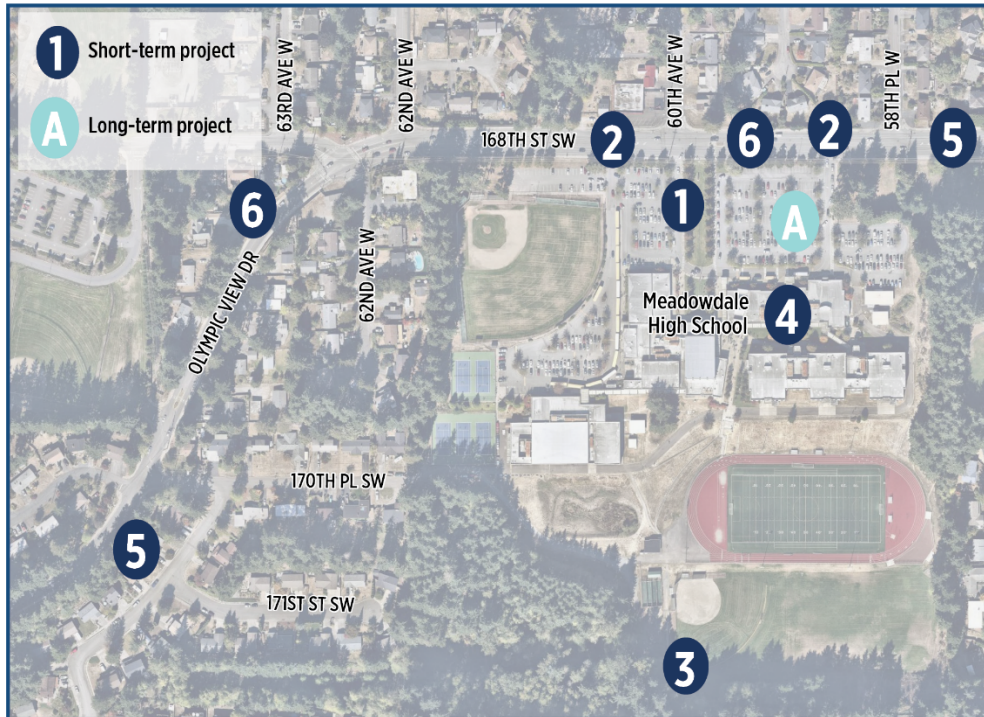
Figure 37 Vehicle Speeds near Meadowdale High School



Source: City of Lynnwood

The following short- and long-term projects were identified through community input and confirmed by stakeholders including Meadowdale High School and Edmonds School District staff. The short-term project list will comprise the City of Lynnwood’s April 2018 Safe Routes to School grant application for Meadowdale High School. The short-term project list includes further study of ways to improve circulation on and access to the high school site. Project details and capital cost estimates for all projects at all schools are described in Figure 48 at the end of this chapter.

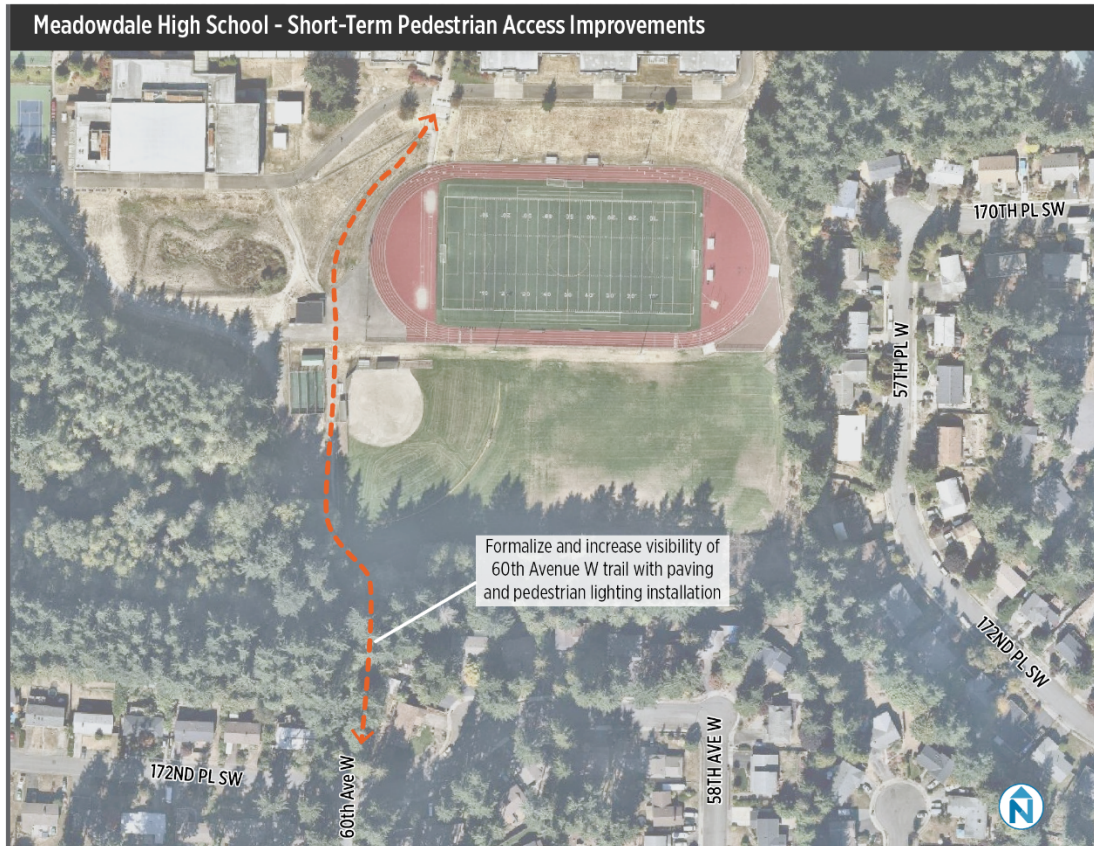
Figure 38 Locations of Proposed Projects at Meadowdale High School



Meadowdale High School Short-Term Project List

1. **Planning and Design Study:** Explore solutions to optimize pedestrian crossing safety and safe, predictable bus and car access to the Meadowdale High School site. The study would evaluate moving the existing pedestrian crossing of 168th Street SW to a location with fewer conflicts with vehicle traffic, given previous crashes at this location. The study would also examine changes to circulation within the high school parking lot.
2. **Pedestrian-Scale Lighting:** Add pedestrian-scaled lighting along both sides of 168th Street SW through the extent of the Meadowdale High School zone to increase visibility of students walking to and from school.
3. **Formalize south access trail:** Pave and add lighting along the trail connecting from the south border of the high school site to the neighborhood at 60th Avenue W and 172nd Place SW. Improvements to this existing foot path will enhance the safety and visibility of this walking route for Meadowdale High School students. See Figure 39 for more detail.

Figure 39 Meadowdale High School – Proposed Pedestrian Access Improvements



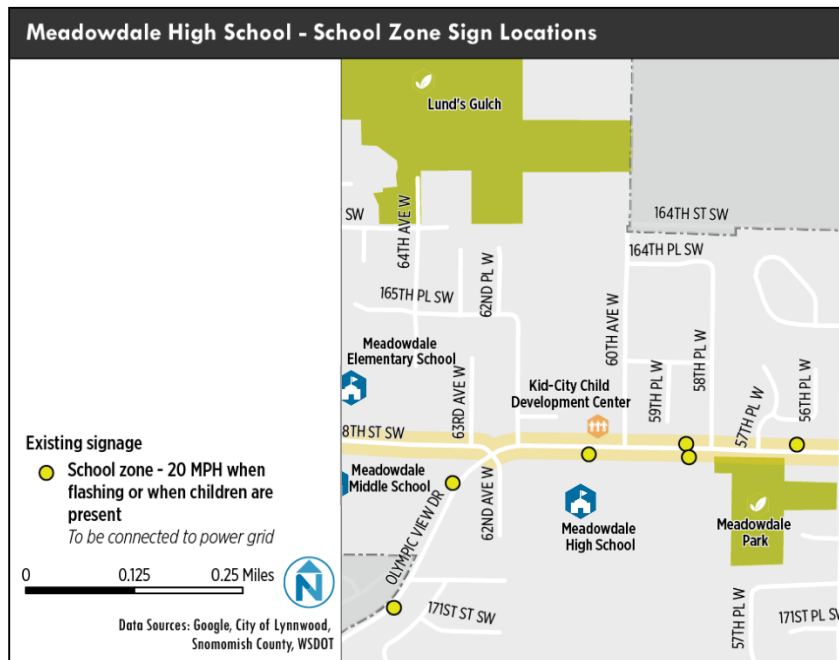
4. **Education:** To maximize the effectiveness of safety improvements and educate the Meadowdale High School student body, parents, and staff about safe travel behavior, and the positive health effects of walking and bicycling to school, the City of Lynnwood, Edmonds School District, and the City of Lynnwood Police Department will work together to lay the groundwork of a safe walking and bicycling education program at Meadowdale High School. Safe Routes to School grant moneys will be leveraged with additional resources and programs from the city and school district to take the following steps:

- Staff from the City of Lynnwood Public Works and Engineering Services division and the Lynnwood Police Department will partner with the Edmonds School District to implement the district's Safe Walking Program by creating, printing, and distributing safety education materials, and participating in an annual program or assembly teaching students about safe travel behavior, and how streets and signals are designed for safety. This partnership could also produce Meadowdale High School's first Walk and Bike to School Day celebration in May 2019.
- As the City of Lynnwood and Edmonds School District partner to complete a planning and design study to optimize pedestrian crossing safety and safe, predictable bus and car access to the Meadowdale High School site, the staff,

student body, and families will be engaged and educated about the appropriate use and benefits of safety improvements.

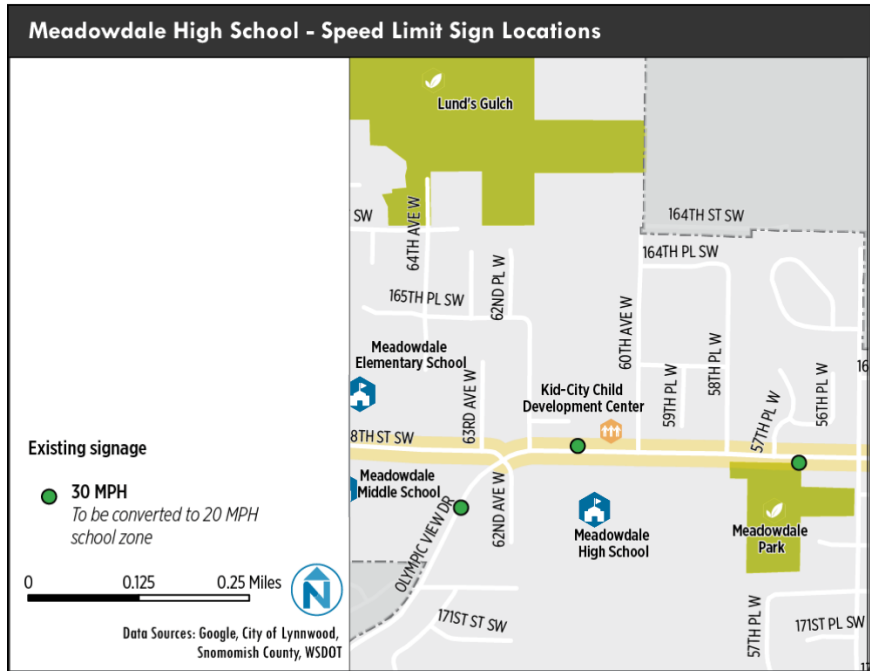
5. **School Zone Speed Limit Signs:** Upgrade existing flashing school zone signs (6 total) by installing power drops to connect to the electric grid ensuring consistent operation year-round. The current signs depend on solar power (see below), and lack of sunlight in winter months means the signs do not always flash. This has also presented an issue in terms of enforcement, as drivers cited for speeding can argue that the school zone signs were not flashing at the time of the citation. See Figure 40 for locations of current solar powered flashing school zone signs.

Figure 40 School Zone Sign Locations at Meadowdale High School



6. **Consolidated school zone:** Consolidate the two school zones along 168th Street SW between Olympic View Drive and 52nd Avenue W into one continuous school zone. Existing school zones extend 330 feet from a marked school crosswalk; however, the posted speed goes from 20 mph back up to 30 mph for short stretches between the existing school zones. Drivers and school staff supported one school zone for legibility and safety. Many students were observed walking the length of 168th Street SW, outside of the school zone areas. Creating one continuous school zone would affect 975 feet between Beverly Elementary and Meadowdale High School and 1,000 feet between Meadowdale High School and Meadowdale Middle and Elementary Schools. It would require converting three 30 mph speed limit signs to 20 mph flashing school zone signs (see green markers in map below for the locations of existing 30 mph signage to be converted). While the standard for establishing school zones states that “a school zone may extend by traffic regulation beyond 330 feet based on a traffic and engineering investigation,” this project may require City Council action. The location of the speed limit signs is shown in XZXXXX.

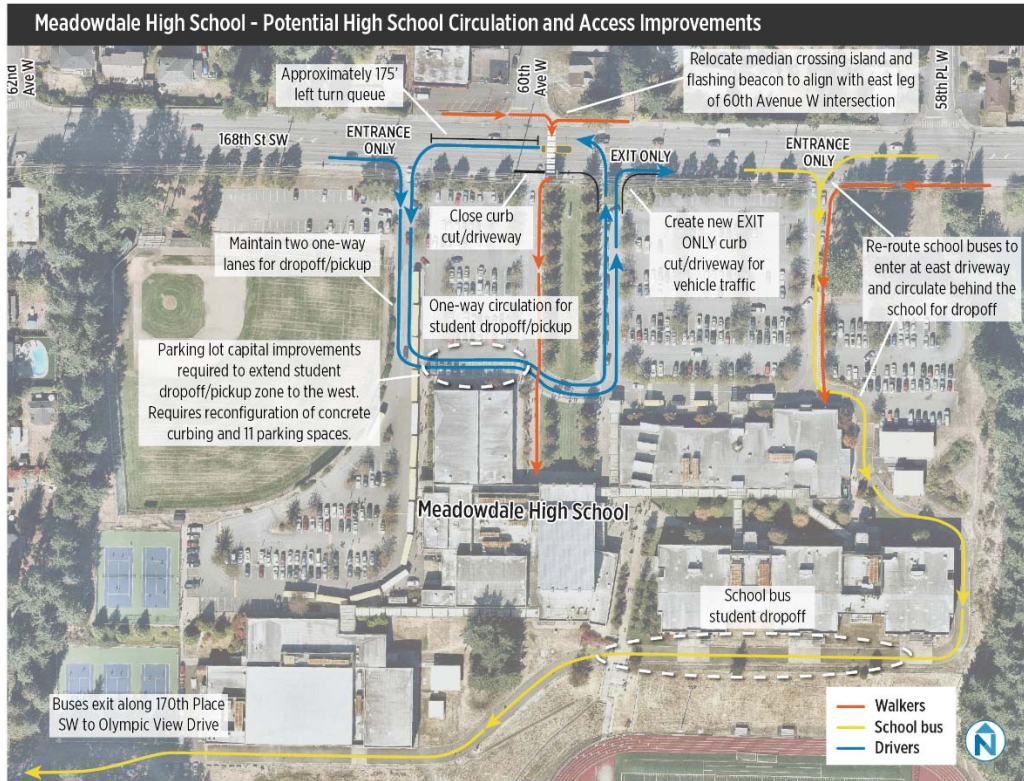
Figure 41 Speed Limit Sign Locations at Meadowdale High School



Meadowdale High School Long-Term Project List

- A. Access and circulation: The short-term project list identifies a planning and design study to explore improvements to circulation and access on the Meadowdale High School site. During the 168th Street SW Corridor Planning Study, the project team met with City of Lynnwood, Meadowdale High School, and Edmonds School District staff to discuss potential circulation and access improvements. The group discussed several options and settled on a potential concept for further study (Figure 42). The improvement concepts proposed in Figure 42 include maintaining a clear, convenient path of travel for students crossing 168th Street SW at 60th Avenue W connecting to the existing sidewalk on the school site, minimizing conflicts between turning vehicles and the pedestrian crossing, and maximizing off-street queueing of vehicles picking up/dropping off students.

Figure 42 Meadowdale High School – Potential Circulation and Access Improvements for Further Study



Concept Overview

- Buses enter via the eastern driveway and circulate behind school, exiting onto Olympic View Drive at 170th Place
- Pedestrian crossing moved to east leg of 60th Avenue W (just west of its current location) and formalize walking path along the 60th Avenue W alignment. The pedestrian crossing would include pedestrian activated beacons and a median island to prohibit queueing vehicles from obstructing the pedestrian crossing.
- Close the parking lot driveway across from 60th Avenue W.
- New curb cut just east of 60th Avenue W to serve as “exit only” driveway.
- Main vehicle entrance at former school bus entrance to serve as a two-lane “entrance only” inbound driveway.

Concept Benefits

- Provides longer left turn queue of 175 feet.
- School bus traffic removed from front of school, including short buses that currently stack in front of main entrance. Fire lane design should be sufficient to handle bus vehicle turns.
- Western entrance (formerly used by buses) open for drivers to use as inbound-only entrance for one-way circulation.

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- Preserves and expands parent pickup/dropoff at the south end of parking lot green space; allows for right door exit directly onto school site. Expanded pickup/dropoff area and two-lane one-way circulation maximizes off-street queueing for pick up and drop off that will relieve on-street congestion in the 168th Street SW left turn lane.
- Students only have to cross vehicle traffic at 168th Street SW and at the existing pickup/dropoff lane directly in front of the school entrance.

Meadowdale Elementary and Middle Schools

Primary issues at this school site include congestion along 168th Street during morning dropoff and afternoon pickup due to limited access points to each school. Unlike at the other two school sites, there have been few crashes at the immediate school area, and driver speeds are generally compliant with school zone and posted speed limits (Figure 43 and Figure 44).

Figure 43 Crash Detail at Meadowdale Middle and Elementary Schools, 2012-2017

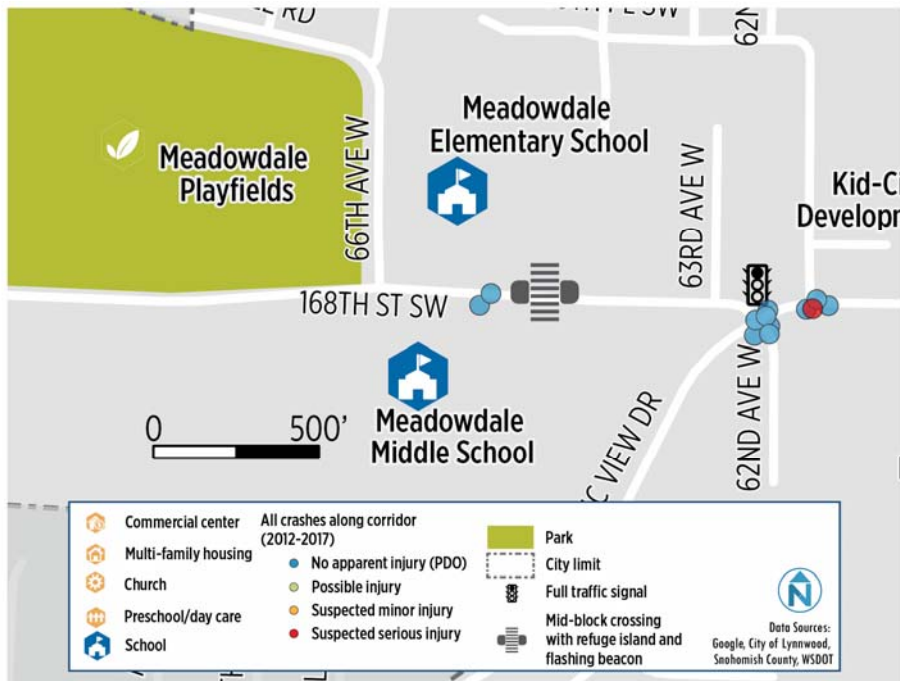
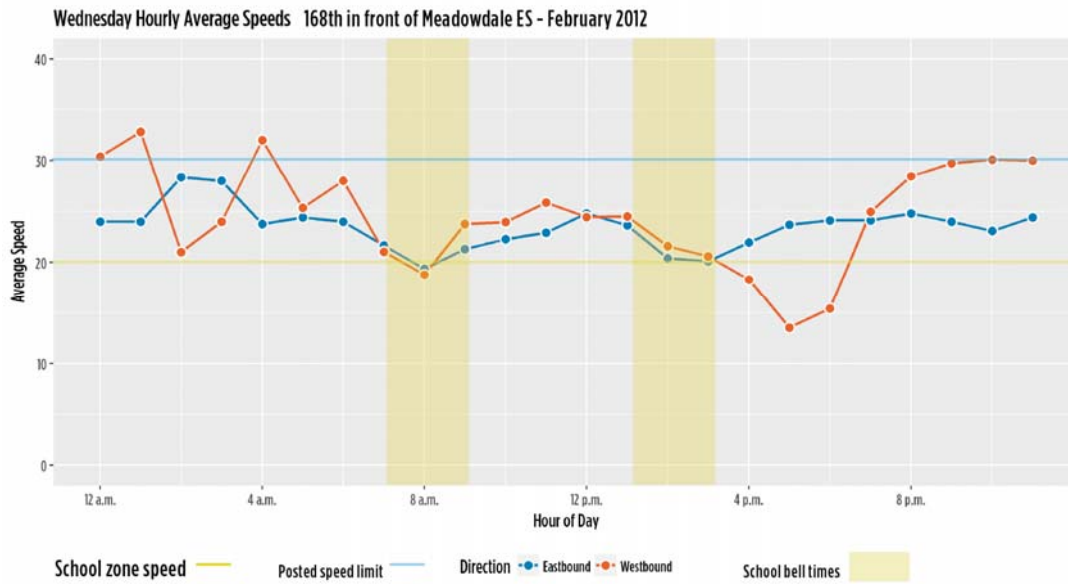


Figure 44 Vehicle Speeds at Meadowdale Middle and Elementary Schools, February 2012

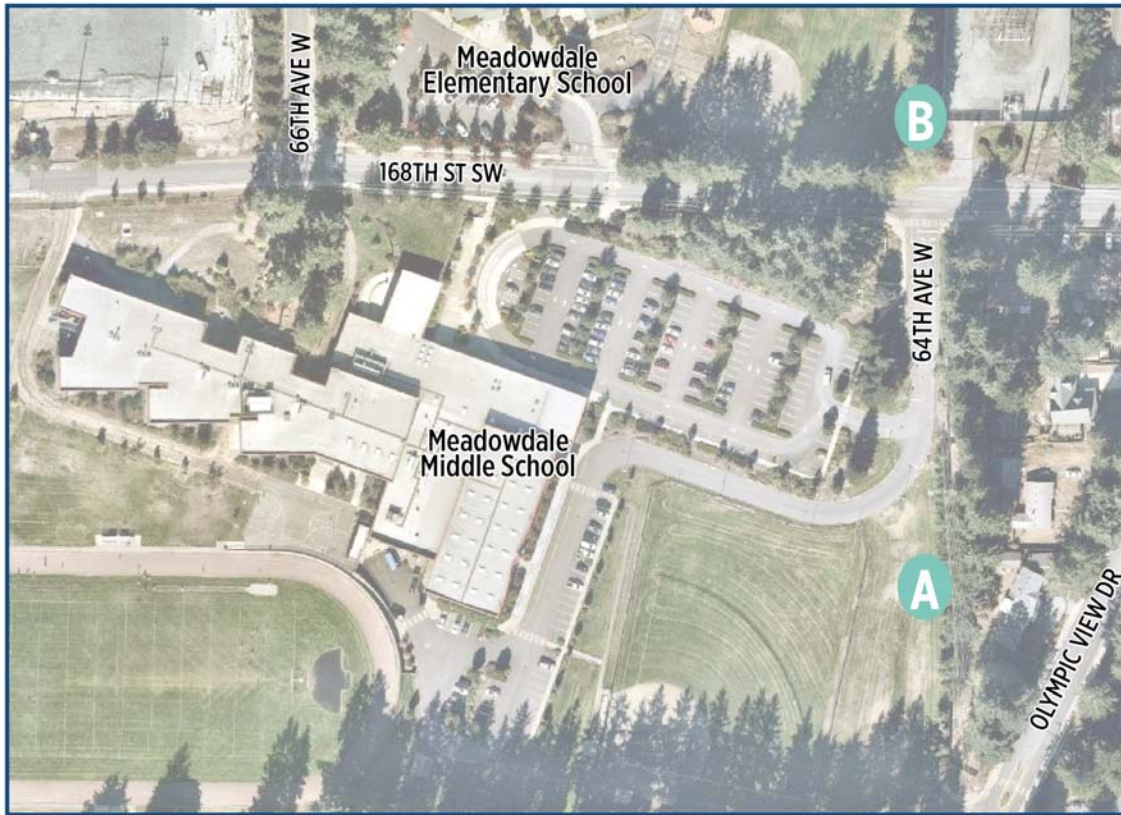


Source: City of Lynnwood

The following long-term projects were identified through community input and confirmed by stakeholders, including Edmonds School District staff. For the most part, people felt positive about pedestrian safety in the vicinity of Meadowdale Elementary and Middle Schools due to the street configuration of one lane per direction with trees and landscaping buffering the sidewalks.

Improvements to decrease congestion include establishing new access points along the 64th Avenue W alignment to the north of 168th Street SW. The City of Lynnwood will continue to work with the Edmonds School District to explore the feasibility and implementation phasing of these access improvements. The City of Lynnwood does not plan to submit Safe Routes to School grant applications for improvements at Meadowdale Elementary and Middle Schools in April 2018.

Figure 45 Locations of Proposed Improvements at Meadowdale Elementary and Middle Schools



Meadowdale Elementary and Middle Schools Long-Term Project List

- A. Fire Lane Access: Consider re-opening the old fire lane (Figure 46) on 64th Avenue W and reconnecting to Olympic View Drive. After dropoff or pickup, parents headed south via Olympic View Drive can take the reconnected fire lane to Olympic View Drive instead of using the 168th Street SW and Olympic View Drive intersection. Due to sight distance restrictions, the turn at 170th Place SW would likely be right in-right out (see Figure 47).

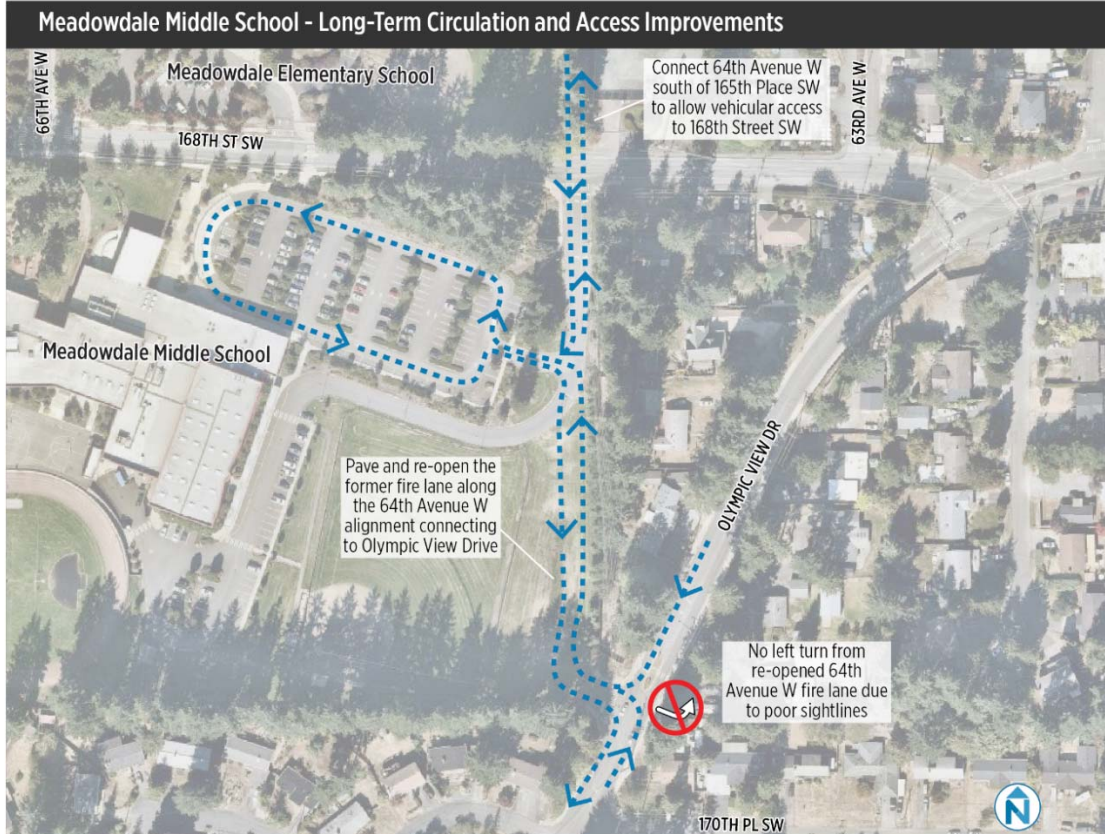
Figure 46 Previous Fire Lane on Meadowdale Middle School Site



Source: GoogleMaps (2008)

- B. **64th Avenue W Extension:** Consider connecting 64th Avenue W south to 168th Street SW to improve neighborhood circulation and access. A walking path currently exists in the alignment as well as a utility substation. Creating a vehicular access point along 64th Avenue W north of 168th Street SW could potentially relieve pressure on the unsignalized intersection of 62nd Avenue W that currently is the main access point to the neighborhood northeast of Meadowdale Elementary (Figure 47).

Figure 47 Meadowdale Middle and Elementary Schools – Long-Term Circulation and Access Improvement



Olympic View Drive Intersection

Feedback from open house participants indicates the need for improving the configuration and traffic operations around the intersection of 168th Street SW and Olympic View Drive. Community members cite the confusion and conflicts between vehicles turning into or out of 62nd Avenue W. The City of Lynnwood should consider further study in this area, focusing on improving safety for people walking and bicycling; normalizing turning movements; calming vehicle speeds; and improving sightlines.

SR 99

Access to locations near the intersection of SR 99 and 168th Street SW is challenging due to long crossing distances for people walking and bicycling, numerous driveways, and high vehicle speeds and volumes on SR 99. The City of Lynnwood should consider further study in this area that focuses on improving access to transit stops, strategies to shorten crossing opportunities and minimize traffic exposure for pedestrians and bicyclists, and examining signal timing to ensure sufficient crossing times.

PROJECT LIST SUMMARY

Costs for individual Safe Routes to School projects are shown in Figure 48. As with the capital cost estimate for the long-term corridor vision, all SRTS project costs are adjusted to 2018 dollars, and include a 60% markup for contingency.

Figure 48 Short-Term Project List for Beverly Elementary (Beverly) and Meadowdale High School (MHS)

| Project ID | Project | Cost | Capital elements | Sources and Notes |
|---|--|---|--|---|
| Beverly Elementary School Short-Term Projects | | | | |
| Beverly 1 | Install school zone signage on mast-arms | \$12,500 | Install four standard regulatory signs with embedded LEDs on signal mast arms at 52 nd Avenue W | Federal Highway Administration 2007 inflation-adjusted estimate |
| Beverly 2 | Photo speed enforcement | \$4,000 for power drop (assumes 100' of conduit) | Run electrical conduit for new camera installation | Conduit – City of Tacoma: Project estimate for signal interconnect |
| Beverly 3 | School zone speed limit signs | \$1,500 to install three new time-based regulatory signs on existing sign posts \$8,000 to install three power drops | Install three regulatory signs Run electrical conduit for three school zone signs | Conduit – City of Tacoma: Project estimate for signal interconnect |

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| Project ID | Project | Cost | Capital elements | Sources and Notes |
|---|---------------------------|---|--|--|
| Beverly 4 | Consolidated school zone | \$7,000 to install one flashing amber signal on existing sign post \$500 to replace 30 MPH sign with 20 MPH sign \$5,500 for one power drop | Replace one 30 MPH sign with time-based regulatory sign on existing sign post Add flashing signal to sign post Run electrical conduit for four flashing signals | Signage and signals – Nelson\Nygaard cost database: City of Santa Ana, standard regulatory sign; flashing amber signal mounted on sign post Conduit –City of Tacoma: Project estimate for signal interconnect |
| Beverly 5 | Education programs | \$30,000 | None | Edmonds School District; City of Lynnwood |
| Beverly 6 | North school site access | None | Formalize path from gate in northeast corner of school lot by publicizing gate opening Lock and unlock gate corresponding with arrival and dismissal times | |
| <i>Beverly Elementary School Projects Sub-Total</i> | | <i>\$69,000</i> | | |
| Meadowdale High School Short-Term Projects | | | | |
| MHS 1 | Planning and Design study | \$10,000 | None | Nelson\Nygaard estimate |
| MHS 2 | Pedestrian-scale lighting | \$351,500 to install light fixtures along 168 th Street SW | Install pedestrian-scale lighting on both sides of 168 th Street SW in front of Meadowdale High School from 62 nd Avenue W to 58 th Place W Approximately 40 fixtures needed | Nelson\Nygaard cost database: National average for pedestrian-scale light fixtures |

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| Project ID | Project | Cost | Capital elements | Sources and Notes |
|--|------------------------------|---|---|--|
| | | | assuming 60' spacing | |
| MHS 3 | Formalize south access trail | \$40,500 for asphalt sidewalk \$97,000 for pedestrian-scale lighting | Pave path and install pedestrian-scale lighting Approximately 11 light fixtures needed assuming 60' spacing | Asphalt path - Nelson\Nygaard cost database: National average for asphalt sidewalk construction Lighting – Nelson\Nygaard cost database: National average for pedestrian-scale light fixtures |
| MHS 4 | Education | \$10,000 | None | Edmonds School District; City of Lynnwood |
| MHS 5 | School zone signage upgrade | \$2,500 to install time-based regulatory signs on existing sign post \$24,500 to install power drops | Install six regulatory signs Run electrical conduit for six school zone signs | Conduit –City of Tacoma: Project estimate for signal interconnect Signage- Nelson\Nygaard cost database: City of Santa Ana, standard regulatory sign |
| MHS 6 | Consolidated school zone | \$20,000 to install flashing amber signals on existing sign posts \$1,500 to replace 30 MPH signs with 20 MPH signs \$7,500 for power drops | Replace three 30 MPH signs with time-based regulatory signs on existing sign posts Add three flashing signals to sign posts Run electrical conduit for three flashing signals | Signage and signals – Nelson\Nygaard cost database: City of Santa Ana, standard regulatory sign; flashing amber signal mounted on sign post Conduit –City of Tacoma: Project estimate for signal interconnect |
| <i>Meadowdale High School Projects Sub-Total</i> | | <i>\$565,000</i> | | |
| Proposed Safe Routes to School Projects Total | | \$634,000 | | |

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Figure 49 Long-Term Project List for Beverly Elementary, Meadowdale High School, and Meadowdale Middle and Elementary Schools (MMS/MES)

| Project ID | Project | Benefits | Potential Partners |
|------------|---|--|--|
| Beverly A | <p>Access from Lund's Gulch</p> <ul style="list-style-type: none"> ▪ Install additional gate on north side of school lot ▪ Pave Lund's Gulch path ▪ Install pedestrian-scale lighting | Eases connection for people walking and biking from neighborhoods north and west of Beverly Elementary School via 165 th Place SW | Snohomish County (parcel owner) |
| MHS A | <p>Access and circulation</p> <ul style="list-style-type: none"> ▪ Reconfigure access and circulation in parking lots for vehicle pick up and drop off ▪ Relocate existing median crossing island ▪ Close curb cut and driveway – rebuild curb and sidewalk ▪ Construct new driveway and curb cut | <ul style="list-style-type: none"> ▪ Improves safety for people walking and biking to Meadowdale High School ▪ Increases safety for students riding the school bus by separating school bus and vehicle pickup/drop off traffic ▪ Increases left turn queue space and brings pedestrian crossing in line with intersection by moving median crossing island to 60th Avenue W ▪ Normalizes vehicle traffic in parking lot by consolidating access points and creating one-way flow | City of Lynnwood and Edmonds School District |
| MMS/MES A | <p>Fire lane access</p> <ul style="list-style-type: none"> ▪ Re-open fire lane from Olympic View Drive ▪ Construct approximately 400' of street in fire lane right-of-way | <ul style="list-style-type: none"> ▪ Restores street grid and eases congestion on 168th Street SW in front of schools and at intersection of Olympic View Drive/168th Street SW | City of Lynnwood and Edmonds School District |
| MMS/MES B | <p>64th Avenue W extension</p> <ul style="list-style-type: none"> ▪ Construct approximately 450' of street from existing 64th Avenue W cul-de-sac south to 168th Street SW | <ul style="list-style-type: none"> ▪ Increases connectivity for people walking, biking, and driving to Meadowdale Middle and Elementary schools from locations to the north ▪ Connects street grid and eases congestion on 64th Avenue W and 62nd Avenue W | City of Lynnwood and Edmonds School District |