



Asa Mercer International Middle School Replacement Project

Draft Project SEPA Checklist

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For questions and more information about this document, please contact the following:

Vincent Gonzales
Senior Project Manager
virgonzales@seattleschools.org

While the Asa Mercer International Middle School Replacement Project Draft State Environmental Policy Act (SEPA) Project Checklist is accessible and Americans with Disabilities Act (ADA) compliant, the attached figures and appendices that support the checklist contain complex material that is not accessible. The following is a description of what is contained in the figures and appendices:

Figure 1, Asa Mercer International Middle School Vicinity, Seattle, Washington. Figure 1 is an aerial photograph of the Asa Mercer International Middle School including its surrounding neighborhood. The project parcel is outlined in red. There is an inset map showing where the site is located within the city of Seattle.

Figure 2, Proposed Asa Mercer International Middle School Conceptual Site Plan (subject to change). Figure 2 provides a conceptual drawing of the proposed new configuration of the Asa Mercer International Middle School facility including site buildings, landscaping and open spaces, sports field, and parking areas. The new building would be located on the western half of the property, with the eastern half of the property consisting of an outdoor learning structure, a synthetic turf field, a loading dock and vehicle and bicycle parking lot (from north to south).

Figure 3, Departures, Setbacks, and Coverages. Figure 3 divides information into three diagrams. Diagram 1 lists required and provided bicycle parking, depicts the location for the illuminated reader board, proposed fence heights and proposed portion of fences within the setback, and the height of building facades along 16th Ave S and along the north entry to the school campus. Diagram 2 depicts two public assembly rooms at the site (commons and gymnasium) and lists the associated parking requirements; Diagram 3 depicts an outline of the school building, relative to the required minimum setback and the property line; The diagram also lists the proposed lot coverage as not exceeding the maximum allowed.

Figure 4, Key to View Assessment Figure Locations, Seattle, Washington. Figure 4 is an aerial photograph of the Asa Mercer International Middle School site including its surrounding neighborhood. It is provided to demonstrate to the reader where the view assessment photos were taken. There is a red outline around the project site parcel. There are yellow arrows at 5 locations to indicate where a view assessment photo was taken, and the arrow indicates the direction. The figures are Figure 4a through Figure 4e and each is described in more detail below.

Figure 4a. Figure 4a is a photo showing a View of the Project Site from Private Residence Located at 4322 16th Ave S, Facing East. The view shows the Asa Mercer International Middle School building with a sidewalk, grass, trees, on-street parking for cars.

Figure 4b. Figure 4b is a photo showing a View of Project Site from Private Residence Located at 4336 16th Avenue S, Facing East. The view shows a school building, steps, sidewalk, lawn.

Figure 4c. Figure 4c is a photo showing a View of Project Site from Business Located at 1625 S Columbian Way, Facing North. There are trees, landscaping, a driveway into school the parking lot, steps into the school campus, and buildings in the background.

Figure 4d. Figure 4d is a photo showing a View of Project Site from Jefferson Park Located Directly North of the Existing School, Facing Southwest. The forefront of the photo shows lawn and trees, a sports field at Jefferson Park, and portables and buildings at the project site.

Figure 4e. Figure 4e is a photo showing a View of Project Site Facing Southwest from the 5th Hole of the Jefferson Park Golf Course Located at 4101 Beacon Avenue S. The view on the northeast of the property is the Jefferson Park Golf course and fence around the golf property.

Appendix A: Transportation Technical Report Appendix A consists of a report titled, “Transportation Technical Report for Mercer Middle School Replacement” prepared by Heffron Transportation, Inc. dated April 4, 2022. The report provides a project description; background conditions related to the traffic volumes, traffic operations, parking supply and occupancy, traffic safety, transit facilities and service, and non-motorized facilities. The report addresses impacts of the proposed school replacement and concludes with recommendations. Attached to the end of the report are Appendix A – Level of Service Definitions, and Appendix B – Parking Utilization Study Data. There are figures and tables in the document, including in the appendices, which graphically depict and organizes data to support the findings in the report.

Appendix B: Noise Memo Appendix B consists of a memo titled, “Draft Mercer International Middle School Replacement Project – Noise Technical Memorandum” prepared by ESA dated March 31, 2022. The memo provides a project description, fundamentals of noise, City of Seattle Municipal code regulations, noise sensitive receivers, existing conditions, and proposed project noise assessments for parking, students, vehicular traffic, athletic activities, and construction. Tables support the findings in the report.

Appendix C: Arborist Report consists of the report titled, “Arborist Report” prepared by Tree Solutions, Inc. dated July 20, 2021, and revised January 26, 2022. The memo provides a summary; assignment and scope of report; observations, discussion, and recommendations; and overall recommendations. Appendices include Appendix A, Photographs and Appendix B, Tree Protection Specifications. Attachments includes Table of Trees and Figures depicting trees identified during the survey.

Appendix D: Greenhouse Gas Emissions Worksheet prepared by ESA. The worksheet is a table listing the lifespan emissions (MTCO_{2e}) for an education building per thousands of square feet.

This concludes the description of the Draft SEPA Checklist figures and appendices for the Asa Mercer International Middle School Replacement Project SEPA Checklist.

Asa Mercer International Middle School Replacement Project

Draft SEPA Checklist

April 2022

PREPARED FOR:

SEATTLE PUBLIC SCHOOLS
2445 THIRD AVENUE SOUTH
SEATTLE, WA 98134

PREPARED BY:

ESA
5309 SHILSHOLE AVENUE NW, STE. 200
SEATTLE, WA 98107

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ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. **Name of the proposed project, if applicable:**
Asa Mercer International Middle School Replacement Project (Mercer Middle School Project)
2. **Name of applicant:**
Seattle Public Schools (SPS)
3. **Address and phone number of applicant and contact person:**
Vincent Gonzales
Seattle Public Schools
2445 Third Avenue S
Seattle, WA 98134
206.252.0151
4. **Date checklist prepared:**
April 2022
5. **Agency requesting checklist:**
Seattle Public Schools (SPS)
6. **Proposed timing or schedule (including phasing, if applicable):**
Construction would begin July 2023 and be completed by fall 2025. Students would be relocated to the Van Asselt School for the duration of construction.
7. **Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

Plans for many of the approved SPS capital levy projects, were included in two prior environmental review documents. Mercer Middle School was listed for funding for improving building conditions in the Building Excellence (BEX) V Final Environmental Impact Statement (EIS). The link to the Final EIS is provided below:

BEX V Final Environmental Impact Statement (FEIS):
https://www.seattleschools.org/wp-content/uploads/2021/08/BEX-V-Final-PEIS_ADA.PDF
8. **List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**
 - *Good Faith Inspection Letter Hazardous Materials Survey.* NOVO Laboratory & Consulting Services Inc., October 1, 2021.
 - *Draft Report of Geotechnical Engineering Services.* Asa Mercer International Middle School. GeoDesign Inc., February 18, 2021.

- *Arborist Report Asa Mercer International Middle School*. Tree Solutions Inc., January 2022.
- *Draft Noise Technical Memorandum*, ESA, March 2022.
- *Final Transportation Technical Report*, Heffron Transportation Inc., April 2022.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

No other government approvals of other proposals directly affecting the property are known to be pending.

10. List any governmental approvals or permits that will be needed for your proposal, if known:

City of Seattle

- Land Use Review - Development Standards Departures
- Environmentally Critical Area Exemption
- Clearing and Grading Permit
- Demolition Permit
- Building Permit
- Other: Mechanical Permit/Electrical Permit/Fire Alarm/Elevator Permits, Side Sewer Permit
- Tree & Vegetation Removal Permit
- Utility Work in the Right-of-Way (ROW)
- Street Improvement Plan

Puget Sound Clean Air Agency

- Notice of Demolition

Tribes

- Executive Order 21-02 Consultation

Washington State Department of Archaeology and Historic Preservation (DAHP)

- Executive Order 21-02 Consultation

Washington Department of Ecology (Ecology)

- National Pollutant Discharge Elimination System (NPDES) Construction and Operation Permits

- 11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page.**

Project Background

Mercer Middle School has been overcrowded for several years. According to the district's 2021 Facilities Master Plan, the existing operational capacity, (the capacity with the 25 portables on site), is 1,296 students. The existing right-size capacity, which is the capacity of the permanent buildings without the portables, is 792. The number of students enrolled in 2019–2020 was 1,115. This results in lack of classrooms and restrooms. Hallways become crowded and the lunchroom and gymnasium are too small. SPS has been planning to find solutions to this problem. Twenty-five portables were brought to the site to assist in serving the over-enrollment resulting in a current capacity of 1,296 students. The SPS Enrollment Planning Team closed enrollment to new students for the 2020–2021 school year. The 2019 BEX V Capital Levy provided funding for a new larger school building. The SPS Enrollment Planning Team continued planning on this issue and on January 27, 2021, the Seattle School Board approved changes to the attendance area boundaries for Mercer Middle School beginning with the 2021–22 school year to prevent future overcrowding.

The school was proposed for replacement because:

- The existing building systems have outlived their useful lives;
- When enrollment exceeds the capacity of the permanent buildings, there are typically insufficient numbers of restrooms; shared spaces such as the gym, library, and dining commons are too small for the population; storage rooms are re-purposed as conference rooms and offices;
- Students have increasingly diverse needs, and greater percentages of the student population need bilingual instruction, special education services, and the like, requiring a variety of types and sizes of spaces that are not present in a 1950's building nor in 900 square foot portable buildings;
- Educational pedagogy has changed and the 1950's model of isolated same-sized classrooms marching along a double-loaded corridor is no longer adequate for differentiating instruction through 1:1 tutoring, mentoring, small group instruction, and the delivery of special education services;
- Permanent buildings can provide better learning environments with better ventilation for indoor air quality, more daylighting, better acoustics, more accessible/updated instructional technologies, and a variety of other system improvements;
- A multistory building can provide capacity for 1,000 students while using less site footprint, freeing up portions of the site for outdoor classrooms and gathering areas, play, and physical education.

SPS now proposes to demolish the existing school buildings at Mercer Middle School and replace them with an improved building and school site, funded by the 2019 BEX V

Capital Levy. The new building would have a capacity for enrolling up to 1,000 students without portables on site. The funding will also provide technology equipment and services, such as routers, peripherals, printers, and other technology for teaching and learning. Subsequent to passage of the BEX V Capital Levy, SPS has proceeded with project planning and is now ready to provide SEPA project-level review for the project to replace Mercer Middle School.

The development of the school design has been influenced by significant involvement from the School Design Advisory Team (SDAT). The team was formed to provide ongoing input and feedback to the Design Team, and included staff, teachers, administrators, students, and members of the community. During pre-design, several meetings were held to obtain feedback and exchange ideas for what would work best at Mercer Middle School, supplying the School District and Design Team with valuable insight about the school. From these meetings, site-specific Design Principles were established and used to focus the design and measure the design evolution against. A total of six SDAT meetings, two Integrated Design Workshops with follow-up sustainability focus groups, one community meeting, and two BEX Oversight reviews were held. In addition to these early SDAT meetings, the Design Team continues check-ins at each phase to ensure alignment with goals. The goals originally outlined encompass the School District's Design Principles and built upon them to meet the needs of this school and community.

This Checklist for the Mercer Middle School Project has been prepared in compliance with the State Environmental Policy Act (SEPA) (Chapter 43.21C of the Revised Code of Washington [RCW]), the state SEPA rules (Chapter 197-11 of the Washington Administrative Code [WAC]), and the School Board's Policy on SEPA Compliance (Policy No. 6890). It is an information document, developed to ensure that the public, agencies, decision-makers, and other interested parties are informed about the potential environmental impacts of the proposed project.

Proposed Project

The proposed project is to demolish the two existing school buildings (totaling approximately 122,300 square feet) and demolish or relocate the portables at Mercer Middle School, located in the Beacon Hill Neighborhood of Seattle at 1600 S Columbian Way. The paved play court and single covered walkway marking the main entry to each building would be removed, along with the hardscape and some of the landscaped areas. According to the district's 2021 Facilities Master Plan, the existing operational capacity (with the 25 portables on site) is 1,296 students. The existing right-size capacity, which is the capacity of the permanent buildings without the portables, is 792.

The proposed project would develop a new school on the existing site. New construction would include a new three-story building on the north portion of the site connected to a one- to two-story school building on the west and south portions of the site, with approximately 175,000 gross square feet of space.

The proposed new building would include classrooms and labs, music rooms, art/project lab, gymnasium and associated physical education spaces, a dining commons area, learning commons areas, and other support and building infrastructure spaces. A new

synthetic turf field and recreational areas would be constructed, surrounded by the new campus building to protect students from noise and surrounding urban areas. Additional recreational space would potentially include new hard surface play areas, soft surface areas, nature play areas, an outdoor learning structure, and a learning garden.

Other proposed improvements would include one or two half basketball courts, pedestrian paving, driveways, loading dock, vehicle and bicycle parking, tree planting, landscaping, irrigation, site lighting, site security, fencing, new utility infrastructure supporting the new improvements, energy-efficient systems including geothermal wells, and right-of-way improvements. The project would also reconfigure the site and change the location and number of on-site parking spaces. In total, the site would have 97 parking spaces for event conditions (72 spaces in the main lot, 12 spaces in the automobile load/unload area, and 13 spaces in the school-bus load/unload area).

When complete, the school would have capacity for approximately 1,000 students, grades 6 through 8. Current full-time employees total 108 staff, which is expected to remain approximately the same. During construction, Mercer Middle School classes would be located at the Van Asselt School Interim Site, located at 7201 Beacon Ave. S.

Existing conditions and the proposed project elements are summarized in **Table 1**.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.**

The school site is located at 1600 S Columbian Way in Seattle, Washington (Parcel 162404-9214). The project site is bounded by S Columbian Way to the southwest, 16th Avenue S to the west, Jefferson Playfield and Jefferson Park Golf Course to the north, and the Veterans Affairs (VA) Puget Sound Health Care Hospital (VA Hospital) to the east. The project location is shown on **Figure 1** and the site plan is shown on **Figure 2**.

The site is located in the southwest quarter of Section 16, Township 24, Range 04. The site is made up of the following parcel and legal description (King County 2021):

- **1624049214.** POR GL 5 BEG AT NXN OF NELY LN OF COLUMBIAN WAY & E LN OF 16TH AVE S TH N 539.88 FT TH S 88-08-51 E 580 FT TH S 14-05-15 W 942.98 FT TH N 42-19-47 W 532.34 FT TO BEG.

Table 1. Mercer Middle School Project Existing and Proposed Elements

Project Site Category	Existing	Proposed
Building Structures and Landscaping	The existing school building facility, portables, and appurtenant structures, including the smokestack. The existing building provides capacity for 792 enrolled students. The addition of the portables on the site provided for an additional 504 students for a total of 1,296 students.	<p>Main school building structures would be demolished, and the new school would be constructed. The capacity for enrollment of students at the new school building would be 1,000 students.</p> <p>Other structures may be demolished or relocated to accommodate the new school building.</p> <p>Site improvements include a new on-site school bus drop-off/pick-up loop, an entry plaza, expanded parking, pedestrian paving, tree planting, landscaping, irrigation, selective clearing and grading, fencing, loading dock, and site lighting. Excavation, fill, and grading are required during these activities.</p> <p>Five of the existing 25 portables would be demolished; the remaining 20 portables would be relocated to other SPS site locations to be determined. New portable classrooms are not currently proposed as part of this project.</p>
Utilities	<p>Existing utilities at the site include electricity, natural gas, water, refuse service, telephone, storm drain, and sanitary sewer.</p> <p>Underground oil tank not in use.</p>	<p>Utilities would be demolished, and new utility services would be installed to serve the new building and associated facilities. Electricity (includes photovoltaic system), water, refuse service, telephone, storm drain, and sanitary sewer would continue to be provided to the school. This may include trenching and minor excavation and would be part of the overall construction at the site. Green stormwater infrastructure would also be provided. Natural gas service would be decommissioned and no longer available at the site.</p> <p>Excavation/disposal of the oil tank as part of demolition in accordance with appropriate Ecology regulatory guidelines.</p>

Project Site Category	Existing	Proposed
Parking	<p>The existing school has two on-site parking lots with a combined striped parking supply of 92 spaces. The main lot, with 72 spaces, is located in the southwest corner of the site; a staff lot is located at the northeast corner of the site and is accessed from the eastern driveway on S Columbian Way.</p> <p>One existing parking lot with parent drop-off (located south, along S Columbian Way).</p> <p>Bus drop-off (located west, along 16th Avenue S).</p>	<p>The project would reconfigure the site and change the location and number of on-site parking spaces. An on-site staff and visitor parking lot with 72 spaces would be constructed at the south end of the site and would be accessed from one driveway on S Columbian Way; school bus load/unload would be accommodated within this lot.</p> <p>Family-vehicle load/unload would be relocated to the west of the site in a new on-site one-way loop (entry at the south, exit to the north). The site frontage along the east side of 16th Avenue S would be reconstructed with curb, gutter, and sidewalk.</p> <p>Both the family-vehicle and school-bus load/unload areas could be used for parking on evenings and weekends for events. In total, the site would have 97 parking spaces for event conditions (72 spaces in the main lot, 12 spaces in the automobile load/unload area, and 13 spaces in the school-bus load/unload area).</p> <p>As part of the frontage improvements required by SDOT along the east side of 16th Avenue S, the project would construct curb, gutter, and sidewalk. The curbside is expected to be available for parallel on-street parking that would be signed for school-load only during peak arrival and dismissal periods. This curbside reconfiguration would reduce the parking capacity along the frontage from 39 spaces (including 35 perpendicular stalls) to 21 parallel spaces. The reconfigured parking is expected to be signed for short-term school-load only during the morning arrival and afternoon dismissal periods but would be available for visitor or other public parking during other times.</p>
Construction Staging	None	<p>Construction access would be provided from S Columbian Way and would include a 100-foot quarry spall construction entrance. The existing parking lot may be utilized for construction parking and laydown areas.</p>

B. ENVIRONMENTAL ELEMENTS

1. Earth

- a. **General description of the site (underline): Flat, rolling, hilly, steep slopes, mountainous, other.**

Most of the existing area where buildings are located is essentially level. Subsurface conditions vary across the site and typically consist of fill from past legal grading activities (GeoDesign 2021). The remainder of the site slopes down toward the SW corner and up toward the NE corner. The change in grade between the SW and NE corners is approximately 35 feet.

- b. **What is the steepest slope on the site (approximate percent slope)?**

The project site contains steep slopes (City of Seattle 2021a, 2021b). Slopes extend from the level areas down to the adjacent rights-of-way. The slopes are shallower at the northwest and southeast corners and increase up to 40 percent at the southwest corner (SiteWorkshop 2021).

- c. **What general types of soils are found on the site (for example clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.**

Soils at the site included fill (consisting of silty sand and gravel), glacial till (consisting of silty sand with gravel and sand with silt), and glacial lacustrine (consisting of interbedded lenses to layers of silty sand, sandy silt, silt with sand, sandy clay, and clay) (GeoDesign Inc. 2021).

Agricultural land of long-term commercial significance is not present on the site.

- d. **Are there any surface indications or a history of unstable soils in the immediate vicinity? If so, describe.**

Washington State is situated at a convergent continental margin and is susceptible to subduction zone, intraplate, and shallow crustal source earthquakes. The site is approximately 1-mile south of the Seattle Fault Zone (SFZ), which is a result of shallow crustal faulting. Geologic evidence indicates at least three episodes of movement on the fault within the last 10,000 years, with the most recent earthquake with surface rupture approximately 1,100 years ago (GeoDesign Inc. 2021).

The slope areas identified as ECAs are the result of past legal grading activities. Based on our review of historical aerial and LiDAR imagery; the slope locations; the consistent grade; and the concrete curbs, roadways, and sidewalks that extend across the toe and top of the slopes, we conclude the slopes were constructed during past grading activities. The slopes appear to be engineered slopes created during the construction of the school and during construction of the VA Hospital to the east. We observed the steep slope areas on and adjacent

to the site and did not observe indications of past or existing slope instability. Evidence of past landslide activity (such as scarps, hummocky terrain, and/or bowed trees) was not observed anywhere on the school property or adjacent areas. We did not observe any springs or groundwater seepage on the slope (GeoDesign 2021).

e. Describe the purpose, type, total area, and approximate quantities of total affected area of any filling or grading proposed. Indicate source of fill.

Expected construction activities for the project include site clearing, excavation and grading, and demolition and removal of existing facilities. The project would require approximately 12,000 bank cubic yards (bcy) of grading and approximately 14,000 bcy of fill. Fill material required for the project would be sourced from an approved off-site location and total amount assumes reuse of native soils. Excavated material would be disposed of at an approved facility.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Construction activities at the site would expose soils, increasing the potential for soil erosion, particularly in areas with steep slopes; however, the implementation of a Temporary Erosion Sedimentation Control (TESC) plan that is consistent with City of Seattle Stormwater Manual and the implementation of best management practices (BMPs) during construction would mitigate potential impacts.

Based on historical information, the existing slopes inclined at 40 percent or more on and adjacent to the site appear to be engineered slopes and should be granted an exemption from ECA regulations. The one slope area meeting the definition of Landslide Prone Areas and Steep Slope Erosion Hazard Area is located adjacent to the site off the school property. We do not anticipate the area would be impacted by grading activities on the site. With proper temporary erosion and sediment control BMPs, the erosion hazard can be managed without off-site impacts (GeoDesign 2021).

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

The current combined impervious coverage on the site is approximately 82 percent. The proposed impervious coverage for the site would be reduced to approximately 65 percent.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

As stated in Chapter 25 of the ECA Ordinance and the Environmentally Critical Areas Exemptions, Relief from Prohibition on Development, and Modifications to Submittal Requirements – Tip 327A, the ECAs on and adjacent to the site should be exempt from the steep slope development standards as a result of

being created through previous legal grading activities. Based on the review of historical topography and geotechnical explorations, it was estimated that the existing slopes that meet the City of Seattle steep slope criteria are a result of previous legal grading activities. In addition, the proposed development would not impact the ECAs on or adjacent to the site (GeoDesign 2021). Based on this analysis, SPS applied for and received an Environmentally Critical Area Exemption from Seattle Department of Construction and Inspections (SDCI) through the ECA GeoTech Review. This approval was received on March 8, 2022.

SPS would be required to obtain an Ecology Construction Stormwater General Permit (also known as the NPDES permit). This permit would require Temporary Erosion and Sedimentation Control (TESC) Plans. Temporary erosion and sedimentation control Best Management Practices (BMPs) would be installed to minimize erosion during construction. BMPs would be specified by the School District in the construction contract documents that the construction contractor would be required to implement. BMPs may include but not be limited to the following:

- Maintaining cover measures atop disturbed ground, including erosion control matting, plastic sheeting, straw mulch, crushed rock or recycled concrete, or mature hydro seed.
- Providing storm drain inlet protection.
- Routing surface water away from work areas and steep slopes.
- Keeping staging areas and travel areas clean and free of track-out (materials adhering to motor vehicles and inadvertently carried out of the project site to a staging area or paved road).
- Covering work areas and stockpiled soils when not in use.
- Completing earthwork during dry weather and site conditions when schedule allows.

2. Air

a. **What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.**

Project activities would produce air emissions during construction, which is anticipated to last approximately 2 years. Construction of this project could generate vehicle emissions, fugitive dust, and odors.

School buses and parent drop-off and pick-up trips would continue as existing practices. No increases in buses are anticipated.

Another consideration regarding air quality and climate relates to greenhouse gas (GHG) emissions. To evaluate climate change impacts of the proposed project relative to the requirements of the City of Seattle, a Greenhouse Gas Emissions Worksheet has been prepared (Appendix D of this Environmental

Checklist). This Worksheet estimates the emissions from the following sources: embodied emissions, energy-related emissions, and transportation related emissions. In total, the estimated lifespan emissions for the proposed project would be approximately 188,459 metric tons of carbon dioxide equivalent (MTCO₂e). Based on an assumed building life of 62.5 years (King County 2007), the proposed project would be estimated to generate approximately 3,015 MTCO₂e annually. For reference, Ecology's threshold for potential significant GHG emissions is 25,000 MTCO₂e annually. Therefore, the proposed project would not be anticipated to generate a significant amount of GHG emissions.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

There are no off-site sources of emissions or odors that would affect the proposed project.

c. Proposed measures to reduce or control emissions or other impacts to air, if any.

Construction

During the design phase, SPS would identify site-specific mitigation measures to minimize construction impacts. These measures may include the following:

- Require contractors to implement measures to control dust and reduce vehicle emissions. Contractors would be required to comply with the Puget Sound Clean Air Agency's (PSCAA) Regulation I, Section 9.15 requiring reasonable precautions to avoid dust emissions and Regulation I, Section 9.11 requiring the best available measures to control emissions of odor-bearing contaminants.

Operations

- The project would follow the SPS anti-idling policy for buses.

The Washington Sustainable Schools Protocol includes indoor air quality requirements for construction procedures to promote adequate indoor air quality after construction. Goals include the prevention of dust and other particulates and contaminants in HVAC ducts and equipment, as well as the use of materials that would not off-gas or release other contaminants into the air.

3. Water

a. Surface Water

1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There is no surface water body on or in the immediate vicinity of the site. According to the King County Interactive Mapping Tool (iMap), the

nearest surface water bodies include: the Duwamish Waterway approximately 1.6 miles to the west; Lake Washington approximately 2 miles to the east; and an unnamed stream approximately 0.7 mile to the northwest, north of the S Columbian Way entrance to I-5 (King County 2022). The City of Seattle's Development Services Office (DSO) Water and Sewer Map maps one wetlands in Maplewood Playfield approximately 0.3 mile to the southwest (City of Seattle 2022).

- 2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.**

The project would not require any work over, in, or adjacent to waters.

- 3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

No fill or dredge material would be placed in or removed from surface water or wetlands.

- 4. Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities, if known.**

The project would not require surface water withdrawals or diversions.

- 5. Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.**

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Maps, the site is not located within a 100-year floodplain (FEMA 2021).

- 6. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.**

The project would not involve the discharge of waste materials to any surface waters.

b. Groundwater

- 1. Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.**

Groundwater would not be withdrawn from a well for drinking water or other purposes.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals ... ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

No waste material would be discharged into the ground. The project site would not use septic tanks.

c. Water Runoff (including stormwater)

1. **Describe the source of runoff (including stormwater) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

Runoff from building roofs and impervious surfaces would be collected from hard surfaces using catch basins and trench drains and conveyed via pipes to bioretention cells. Pervious and landscape surfaces would utilize swales, underdrains, and French drains to convey runoff to the conveyance system.

Currently, stormwater is discharged to the sanitary sewer. The proposed project would separate stormwater and sewer and provide a new stormwater service connection to the stormwater main in S Columbian Way (Bassetti 2021). Stormwater would eventually outflow into the Duwamish Waterway, approximately 1.6 miles to the west.

2. **Could waste materials enter ground or surface waters? If so, generally describe.**

No waste material would be discharged to ground or surface waters as a result of the proposed project.

3. **Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe**

The project would not alter or otherwise affect drainage patterns in the vicinity of the site.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

Construction: SPS would identify site-specific BMPs in the construction contract documents that the construction contractor would be required to implement. These may include but are not limited to the following:

- A Stormwater Pollution Prevention Plan (SWPPP), which includes a TESC Plan, would be required to prevent sediment transport from the project site. Other erosion control measures would be incorporated, as necessary, in accordance with City of Seattle and Ecology requirements.

- Erosion control measures could include the use of catch basin inlet protection, a stabilized construction entrance, perimeter silt fences and mulch in exposed areas, armoring subgrade soils needed at working areas with rocks, catch basin filters, interceptor swales, hay bales, sediment traps, and other appropriate cover measures as specified in the SWPPP.
- All debris and spoil material would be transported off-site to an appropriate disposal facility.
- Refueling would take place more than 100 feet from surface waters.

School Operations: On-Site Stormwater Management – As part of an overall on-site stormwater management strategy, bioretention planting areas would be integrated into the school courtyard. Basic Water Quality treatment is required to be met per City of Seattle Stormwater Code as the project involves more than 5,000 square feet of new plus replaced pollution-generating hard surface and discharges to the Duwamish River. Bioretention cells would treat any new and replaced pollution-generation hard surfaces, particularly within the proposed parking lot. Some areas (loading dock and access drives) may require a below-grade media filter treatment vault (BioPod, StormFilter, or equivalent product).

4. Plants

An Arborist Report (Tree Solutions 2022) was prepared for the proposed project; the results of the report are summarized in this section. For further details on the Arborist Report, refer to Appendix C of this Checklist.

a. Check the types of vegetation found on the site:

- X deciduous trees: Lombardy poplar (*Populus nigra*), black cottonwood (*Populus trichocarpa*), English oak (*Quercus robur*), Raywood ash (*Fraxinus oxycarpa*), corkscrew willow (*Salix matsudana tortuosa*), Norway maple (*Acer platanoides*), red alder (*Alnus rubra*), paper birch (*Betula papyrifera*), strawberry tree (*Arbutus unedo*), vine maple (*Acer circinatum*), European white birch (*Betula pendula*), windmill palm (*Trachycarpus fortune*), Japanese maple (*Acer palmatum*), saucer magnolia (*magnolia x soulangiana*), narrow-leafed ash (*Fraxinus angustifolia*), bitter cherry (*Prunus emarginata* var. *mollis*), mountain ash (*Sorbus aucuparia*), Callery pear (*Pyrus calleryana*), red oak (*Quercus rubra*), bigleaf maple (*Acer macrophyllum*), and madrone (*Arubuts menziesii*).
- X evergreen trees: Western red cedar (*Thuja plicata*), Japanese cedar (*Cryptomeria japonica*), atlas cedar (*Cedrus atlantica*), Jeffery pine (*Pinus jeffreyi*), Mugo pine (*pinus mugo*), white spruce (*Picea glauca*), Austrian black pine (*Pinus nigra*), Colorado spruce (*Picea pungens*), Sawara cypress (*Chamaoecyparis pisifera*), Japanese red pine (*Pinus densiflora*), Douglas-fir (*Pseudotsuga menziesii*), and Deodar Cedar (*Cedrus deodara*).
- X shrubs: tall Oregon grape (*Mahonia aquifolium*) and a variety of ornamental shrubs.

- ☒ grass
- ☐ pasture
- ☐ crop or grain
- ☐ Orchards, vineyards, or other permanent crops.
- ☐ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other:
- ☐ water plants: water lily, eelgrass, milfoil, other
- ☒ other types of vegetation: English ivy (*Hedera helix*)

b. What kind and amount of vegetation will be removed or altered?

The project would result in the removal or alteration of existing vegetation including trees on the site.

Vegetation Removal

The project would result in the removal of vegetation including existing landscaping and plantings as needed for the proposed new building and site improvements. This includes the removal of invasive species from the perimeter areas as well as plants in poor health within the interior of the site.

Tree Removal

Tree Solutions (Tree Solutions 2022) inventoried and assessed 60 trees on the site (greater than 6 inches in diameter at breast height [DBH]). Of the assessed trees, six meet the Exceptional Tree criteria outlined in the Seattle Director's Rule 16-2008. One, Tree #452, a *Magnolia x soulangiana*, is within the proposed building footprint and would be removed. The other 5 exceptional trees would be protected and retained in place. In addition, 27 trees are to be removed as part of this project: one of these trees to be removed is greater than 24 inches DBH (Tree #406, a 25" DBH *Populus nigra 'italica'*); the remaining 26 of the trees to be removed are all less than 24 inches DBH.

Forty-eight trees located on adjacent properties with overhanging canopies were also inventoried. The majority of the off-site trees are located to the east of the School District property on a parcel owned by the United States Department of Veterans Affairs. Off-site trees require protection at their dripline during both demolition and construction activities. Five of the trees located at the VA Hospital property were recommended for removal due to poor structural health and potential hazard of falling onto school property and have been removed by Veteran's Affairs.

Tree Replacement

Tree Solutions recommends a replacement rate of 1:1 for trees below regulated size outside of Environmentally Critical Areas (ECAs). Replacement of exceptional trees and trees greater than 24-inches diameter at standard height are subject to requirements as outlined in SMC 25.11.090.

The proposed project includes the addition of 92 new trees. Of these new trees, 4 are required as replacement for the removal of existing Tree #406, which is greater than 24 inches DBH, and Tree #452 which is an exceptional tree.

Tree and vegetation removal plans would be reviewed as part of the project's permit application.

c. List threatened or endangered species known to be on or near the site.

No threatened or endangered plant species are known to be on or near the site (USFWS 2022; WDNR 2022).

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

A landscaping plan would be prepared for the site. Additional proposed measures to preserve and enhance vegetation may include the following:

- Improvements along streets to incorporate a green pedestrian route.
- Integration of green infrastructure including bioretention planting areas that would be used for stormwater management.
- Preservation of existing trees in good condition and new multi-layered tree plantings throughout the site.
- Plant material selection would draw from the regional character and include drought-tolerant, native, and adapted plants selected for suitability in the Puget Sound Lowlands, including shrubs and groundcovers.
- Existing soils would be amended to ensure the long-term health and success of the investments made in new landscape areas.

e. List all noxious weeds and invasive species known to be on or near the site.

King County iMap does not map any noxious weeds as occurring on the site. However, English ivy, designated as a Class C noxious weed by King County, was observed onsite during a December 14, 2021 site visit.

5. Animals

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site. Examples include:

Animals observed on the site are restricted to birds and animals typically found in urban areas:

- **Fish:** Not applicable.
- **Amphibians:** None observed.
- **Reptiles:** None observed.
- **Birds:** Hummingbirds, gull, American crow, robin, Steller's jay.
- **Mammals:** Norway rat, raccoon, squirrel, opossum.

b. List any threatened or endangered species known to be on near the site.

According to the Washington Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) program maps, there are no listed species on the project site (WDFW 2022). The U.S. Fish and Wildlife Service (USFWS) Environmental Conservation Online System (ECOS) Information for Planning and Consultation (IPaC) online tool does not designate critical habitat for threatened or endangered species on the site (USFWS 2022). The IPaC online tool does map marbled murrelet, streaked horn lark, and yellow-billed cuckoo, all species listed as Threatened, as occurring within the region. However, suitable habitats for these species such as old-growth forests, riparian forests, and/or large prairies do not exist on-site or in the vicinity.

There are no other threatened or endangered species known to be on or near the project site. Therefore, the potential for threatened or endangered animal species to be present is low.

c. Is the site part of a migration route? If so, explain.

The Puget Sound area is located within the Pacific Flyway, which is a flight corridor for migrating waterfowl and other avian fauna. The Pacific Flyway extends from Alaska to Mexico and South America. No portion of the proposed project would interfere with or alter the Pacific Flyway.

d. Proposed measures to preserve or enhance wildlife, if any.

New trees and native plants with habitat attributes are proposed throughout the site. These improvements would increase habitat function and opportunities throughout the site.

e. List any invasive animal species known to be on or near the site.

Invasive animal species in the area include Norway rat, raccoon, opossum, and rodents that are typically found in urban areas.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Activities for the school would require electricity to operate. The project is proposed to include between approximately 44 to 88 kilowatts (kW) of photovoltaics (PV), and infrastructure would be provided to support future PV installations. The project design target is for the buildings' energy use to be capable of being fully offset with the installation of future PVs (Net Zero Ready).

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

The project is located at an existing school site and the new replacement structures would not affect the use of solar energy by adjacent properties.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

Under the City of Seattle's Executive Order 05-01, public school construction projects receiving state assistance must be built to the Washington Sustainable Schools Protocol, or to Leadership in Energy and Environmental Design (LEED) Silver standards. The program requires a 10 percent reduction in energy use beyond what is required by the Washington State Energy Code (RCW 39.35D.040).

The proposed replacement project includes energy conservation features to substantially reduce energy use compared to the existing school building energy use. Overall, the energy efficiency of the replacement school project would reduce demand for and use of energy and natural resources. The following energy conservation features may be included:

- Power metering providing feedback on building system energy consumption and opportunities to identify modifications to maximize building efficiency (e.g., classroom thermal comfort study, passive solar investigations, performance updates, and envelope sensitivity and passive vent).
- Energy Star-certified food service equipment.
- Light-emitting diode (LED) lighting with a system tailored to the type of illumination desired within each space or areas (ambient, general, accent, display, task, emergency, and exit).
- Lighting control devices may include time clocks, occupancy sensors, light reduction controls, photo sensors, dimming controls, and emergency egress lighting controllers.
- High Efficiency HVAC system that includes a ground source heat pump plant to provide heating and cooling.
- Dedicated outdoor-air systems with heat recovery provides ventilation to each space.
- Heat pump water heaters for domestic hot water.

7. Environmental Health

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste that could occur as a result of this proposal? If so, describe.

The project may result in accidental spills of hazardous materials from construction equipment and vehicles. Spilled materials could include fuels, lubricants, solvents, antifreeze, and similar materials. If not contained, these contaminants could enter groundwater or surface water.

Hazardous materials could be encountered during demolition, grading, and excavation of the site. Disturbance of these materials during construction could release hazardous materials to the air or surface and groundwater or could expose construction workers unless proper handling methods were used.

1. Describe any known or possible contamination at the site from present or past uses.

According to the Ecology Facility/Site(s) database (Ecology 2021), the Mercer Middle School site is not known to have contamination from present or past uses.

NOVO Laboratory & Consulting Services Inc. (NOVO) conducted a Good Faith Inspection hazardous materials survey of the existing buildings at the project site. The survey included asbestos-containing materials (ACM); lead-containing paint (LCP); the assessment of various heavy metals and silica-containing construction materials; and the inspection of fluorescent lamps for polychlorinated biphenyl (PCB) containing ballast and mercury containing fluorescent light tubes (NOVO 2021).

Sampling results identified ACMs, painted building components containing some amount of lead in paint, the presence of metals in some materials, and fluorescent lights were observed throughout the property (NOVO 2021).

An existing oil underground storage tank (UST) would need to be demolished per hazardous materials plans and specifications, with an allowance for possible contaminated soils, and filling the void with structural fill soils. If adjacent contaminated soils were found during the removal of the UST, soils would be removed and disposed of according to appropriate Ecology regulatory guidelines.

An abandoned 8-inch asbestos cement water service line originally serving the VA Hospital is located on-site. Once the meter is decommissioned, the asbestos cement pipe may need to be demolished and removed or abandoned in place, per hazardous materials specifications and plans.

2. Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

There are no known existing hazardous chemicals or conditions that would affect project development.

3. Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

Chemicals stored and used during construction would likely be limited to gasoline and other petroleum-based products required for the maintenance and operation of construction equipment and vehicles.

During operation of the school facility, chemicals that may be used or stored include the following (EPA 2006):

- Laboratory chemicals (e.g., acids, bases, solvents, metals, salts)
- Industrial arts class materials (e.g., inks)
- Art supplies (e.g., paints, photographic chemicals)
- Pesticides, fertilizers, and deicers
- Maintenance supplies and equipment (e.g., drain cleaners, floor stripping products, paints, oils, fuels, mercury switches, and gauges)
- Health care equipment

4. Describe special emergency services that might be required.

The project would not require any special emergency services.

5. Proposed measures to reduce or control environmental health hazards, if any:

Proposed measures to reduce or control environmental health hazards include those listed below:

- SPS would comply with applicable regulations for the removal and disposal of any hazardous materials found on-site.
- Site-specific pollution prevention plans, and spill prevention and control plans would be developed to prevent or minimize impacts from hazardous materials.

b. Noise

A *Noise Memo* (ESA 2022) was prepared for the proposed project, and the results of the report are summarized in this section. For further details on the *Noise Memo*, refer to Appendix B of this Checklist.

1. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

In general, Seattle receives noise from sources that include traffic from freeways, highways, and arterial streets, as well as overflights associated with Boeing Field and Sea-Tac International Airport. In addition to these sources, noise from emergency responders operating out of the neighboring VA Hospital are currently heard at the Mercer Middle School site. The City of Seattle regulates noise via the Seattle Noise Ordinance (SMC Chapter 25.08). The ordinance sets a limit for exterior sound levels based on land use, establishes quiet hours, and prohibits construction and maintenance activities during certain hours of the day.

2. What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Construction: Construction of school projects would generate short-term noise and possibly vibration. Construction equipment and vehicles may include jackhammers, drill augers, track hoes, dump trucks, forklifts, and boom trucks. This equipment would be in use most during the initial stages of construction, typically during the first 2 to 3 months of construction. For much of the rest of the construction period, exterior and interior work would generate noise levels much lower than those of the heavy construction phase of the project.

School Operations: Operations at the school would be audible to neighbors but are expected to be similar or slightly lower than existing noise levels because of the expected lower number of students on site from existing conditions. Noise sources from middle schools typically include student voices, school bells, regular vehicular traffic, and building mechanical equipment. Residences west of 16th Avenue S, near the new one-way family-student drop-off loop, would experience a slight reduction in school-related noise levels at the beginning and end of the school day because the bus drop-off area would be relocated to the southeast parking lot and the new family-student drop-off loop would redirect traffic approximately 30 feet east of 16th Avenue S. Noise during lunch and recess periods is expected to be similar to existing levels. Noise generally occurs during normal school operating hours (approximately 8:45 a.m. to 3:45 p.m.), although evening events would occasionally be held at the school.

3. Proposed measures to reduce or control noise impacts, if any:

General measures that may be imposed on the project to reduce or control noise impacts may include those listed below:

- Construction activities would be restricted to hours designated by SMC 25.08.425. The Seattle Land Use Code allows construction equipment operations between the hours of 7 a.m. and 10 p.m. on weekdays and 9 a.m. and 10 p.m. on weekends and holidays. Construction would generally occur between 7 a.m. and 5 p.m. on weekdays. Construction occurring at night or on holidays is not currently planned. Weekend construction could occur in some cases.
- If construction activities exceed permitted noise levels, SPS would instruct contractors to implement measures to reduce noise impacts to comply with the noise ordinance, which may include additional muffling of equipment.
- School operations would adhere to the Seattle Noise Ordinance. The code further regulates noises considered “unreasonable”

including “loud and raucous, and frequent repetitive or continuous sounds made by the amplified or unamplified human voice” between the hours of 10 p.m. and 7 a.m. During these hours, the maximum allowable noise from one property to another within residential districts is reduced to 45 Leq (dBA) (i.e., Equivalent Continuous Sound Pressure Level, A-weighted decibels).

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

The project site currently houses an SPS middle school campus comprised of a parking lot, two main rectangular buildings, portable buildings, and a play area. Adjacent property uses include the following:

- **North** –Jefferson Golf Course and Jefferson Playfield (Seattle City Parks).
- **South** –Private school, Produce market, Church
- **East** –VA Hospital.
- **West** – Apartments (mixed-use), Beacon Hill Church of the Nazarene, Kawaii Spa, and single-family residences.

The project would not affect the current or adjacent land uses since the site has been used as a school since 1957 and would continue to be used as a school.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

The site has been developed as a school since 1957. The site is not used for working farmland or working forest lands.

1. Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

No working forest lands are located near the project site. The project would not affect or be affected by farm operations.

c. Describe any structures on the site.

Existing structures on-site include the two school buildings totaling approximately 122,300 square feet (not including the 25 portables). The school building facility houses a system of building units including a parking lot on the south side and parking area on the northeast corner; two main rectangular buildings connected east to west by a walkway; portable buildings on the north, northeast, and southeast perimeters; and a play area.

d. Will any structures be demolished? If so, what?

The existing school buildings and 5 of the existing 25 portables would be demolished (see also Section A.6, above). The remaining 20 portables would be relocated but the final destination has not been determined.

Other site demolition activities include the removal of existing utilities within project limits; breaking and removal of paved areas; play areas; appurtenant structures; parking areas; lighting, and removal of below-grade construction such as foundation walls and footings.

e. What is the current zoning classification of the site?

The current zoning classification of the school site is Single Family SF 5000 (City of Seattle 2021a).

f. What is the current comprehensive plan designation of the site?

The City of Seattle Comprehensive Plan designation of the site as a “Single Family Residential Area” (City of Seattle 2021b).

g. If applicable, what is the current shoreline master program designation of the site?

The project site is not within a shoreline jurisdiction. Therefore, there is no applicable Shoreline Master Program designation (City of Seattle 2021a).

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

The City of Seattle regulates environmentally critical areas through SMC Chapter 25.09. The City’s ECA geographic information systems (GIS) data were reviewed to assess ECAs on the project site. The project site contains steep slopes (City of Seattle 2021a, 2021b) and a small portion of landslide-prone areas in the northeast corner of the parcel (GeoDesign Inc. 2021). Portions of the steep slopes area would be impacted by construction activities. The project site contains steep slopes (City of Seattle 2021a, 2021b). Slopes extend from the level areas down to the adjacent rights-of-way. The slopes are shallower at the northwest and southeast corners and increase up to 40 percent at the southwest corner (SiteWorkshop 2021). Based on this analysis, SPS applied for and received an Environmentally Critical Area Exemption from Seattle Department of Construction and Inspections (SDCI) through the ECA GeoTech Review. This approval was received on 3/8/22.

i. Approximately how many people would reside or work in the completed project?

With the proposed replacement, Mercer Middle School would have capacity for an enrollment of up to 1,000 students and approximately 108 full-time employees.

j. Approximately how many people would the completed project displace?

The completed project would not displace any people. Students and staff would be relocated to an off-site learning space during construction.

k. Proposed measures to avoid or reduce displacement impacts, if any:

A temporary off-site learning space has been prepared. Therefore, no mitigation measures are needed.

l. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

Environmentally Critical Areas: During construction, BMPs would be employed to minimize clearing and grading impacts and runoff to ECAs and their buffers. These measures may include the following:

- For sites with steep slopes, appropriate building setbacks and erosion control measures would be taken into consideration. An exemption from the City of Seattle would be required prior to construction.
- Existing trees would be retained to the extent possible, and new trees and landscaping would be provided around the property in compliance with City requirements (SMC 25.11.090 and SMC 23.44.008.I).
- Mitigation plans would be developed in compliance with the City's ECA regulations (SMC 25.09).

SPS applied for and received an Environmentally Critical Area Exemption from Department of Construction and Inspections (SDCI) through the ECA GeoTech Review. This approval was received on 3/8/22.

Compatibility with Existing Land Use Plans:

Seattle 2035 Comprehensive Plan (City of Seattle 2021b)

The project is compatible with North Beacon Hill Land Use Policies, specifically:

- **NBH-P25** Recognize the existing residential character of many streets within the urban village and support mechanisms to protect these streets from increased traffic.
- **NBH-P26** Strive to implement neighborhood traffic-calming control devices and strategies that protect local residential streets from through-traffic, short-cutting, high volumes, and high-speed traffic as growth occurs within the urban village.
- **NBH-P27** Recognize the unique topography and location of North Beacon Hill and its connections to major arterials, freeway access points, and sports-stadium destinations and seek ways to mitigate the resulting traffic impacts on residential street systems.
- **NBH-P39** Seek to preserve scenic views from parks located within the neighborhood.

The project is consistent with other existing land use regulations and plans. The Seattle Municipal Code contains development standards for public schools in residential zones in SMC 23.51B.002. The Seattle Land Use Code (Chapter 23.79) acknowledges that schools have different requirements than residential buildings, and design departures from the development standards in the code may be permitted through the departures process. The departure process requires SPS to apply to the Director of the Department of Construction and Inspections (SDCI) for departures. SDCI may approve departures if they meet certain criteria in SMC Chapter 23.79. The project would require a departure for building height and parking.

Zoning setbacks: The code allows fences up to 6 feet in height in required setback. The project proposes 8-foot-high fences in the northeast corner of the site for an approximately 160-foot length of fence and along the eastern property line (see **Figure 3**). In addition, a 10-foot-high fence would be included at the southern soccer field boundary from the east property line across the 30-foot setback.

m. Proposed measures to ensure the proposal is compatible with nearby agricultural and forest lands of long-term commercial significance, if any:

The project is not located near any agricultural or forest lands of long-term commercial significance. No measures to ensure compatibility are required.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

No housing units would be provided as part of the project.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

No housing units would be eliminated.

c. Describe proposed measures to reduce or control housing impacts, if any.

The project would not cause housing impacts. Therefore, mitigation measures to control housing impacts would not be required.

10. Aesthetics

a. What is the tallest height of any of the proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

The allowable height for a school in single family zones is 35 feet. The proposed maximum building would be 67 feet above average grade. The over height areas would be mechanical penthouses stepped in from the face of the three-story

building wing and for the tallest parapet which would be 32 feet and 12 feet respectively above allowable height.

The principal exterior building material would be brick veneer and glazing, with a combination of wood and masonry designed to provide durability and longevity.

b. What views in the immediate vicinity would be altered or obstructed?

Through the City of Seattle SEPA regulations, public views of Mount Rainier, the Olympic and Cascade mountain ranges, major bodies of water including Puget Sound, Lake Washington, Lake Union, and the Ship Canal, and the Downtown Skyline are protected from public places (SMC 25.05.675.P). There are no known public viewpoints that would be affected by the construction of the project. There are no views from Jefferson Park located immediately to the north of the site. There are no protected views of or from the Mercer Middle School site.

In addition, a nine-story VA Hospital and parking garage are located directly adjacent to the project site to the east. Therefore, there are no current or future views available from the school site to the east.

The City of Seattle protects scenic routes (Seattle Ordinances #97025 and #114057, SMC 25.05.675 P.1.b). S Columbian Way to the south of the project site and 15th Avenue S one block to the west of the project site are scenic routes as defined in the Seattle Mayor's April 1987 Open Space Policies Recommendation. Construction on the school site would not have long-term impacts on either of these view rights-of-way. The school buildings meet setback requirements as required for view corridors.

There are no known viewpoints that would be affected by construction of the project. **Figure 4** provides a key to the location of the photos of representative views of the project site from the north, west, and south (see **Figures 4a through 4e**). There are no (or limited or obstructed) views from the streets surrounding the area, even those specifically designated as protected view areas.

Views from nearby residences and businesses facing the school campus would be altered as the school buildings are demolished and replaced with new buildings, which would include new exterior facades. However, the character and use of the site as school buildings would not change. The new school has been designed to be aesthetically appealing and recede into the landscape, and along with new trees, is considered to be an improvement over the aesthetics of the view of the older existing school. The character and use of the site as a public school would not change (see **Figure 5**).

An electronic reader board would replace the static sign on S Columbian Way and would be visible from the ROW. City Code does not allow for flashing, changing image or message board signs in single-family zones. The project proposes one single-sided, electric changing image message board sign on Columbian Way S frontage (see **Figure 3**).

c. Proposed measures to control or reduce aesthetic impacts, if any:

SPS will seek a height departure, as allowed in the City Code for new public school buildings, because the maximum height allowed under the current zoning is 35 feet plus 15 feet for pitched roofs (SMC 23.51B.002.D.1.b). The height of the building, and the level of the height departure, would vary across the site: from approximately 1 foot 5 inches to 26 feet 1 inch (see **Figure 5**) to accommodate parapet walls and mechanical equipment.

No significant aesthetic impacts are expected. The new school has been designed to be aesthetically appealing and feel natural and inviting (Bassetti 2021). The site would include trees and shrubs which would contribute to the landscape aesthetics of the site, and therefore the observation of environmental scenery. The east property line bordering the nine-story VA Hospital would be buffered with a mix of evergreen and deciduous planting to create a filtered edge and reinforce the safe, congenial setting of the courtyard. In addition, the buildings would be set back further than required from the property line.

11. Light and Glare**a. What type of light or glare will the proposal produce? What time of day would it mainly occur?**

Proposed Parking Lot and Security Lighting: Existing parking lot lights would be removed, and new LED parking lot lights provided in new locations. Additional lighting would be provided as needed for the parking areas, pathways, entryways, and general security.

An electronic reader board is proposed measuring approximately 10 feet in length, by 5.5 feet in height, by 2 feet in width. This sign would replace the existing static sign on S Columbian Way; light and glare would be most visible at night.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

The illumination systems would not pose a safety hazard or interfere with views from off-site locations when the lights are operating at night. Existing standards for shielding of lights would continue to apply.

The electronic reader board would be operated in a way that minimizes driver distraction.

c. What existing off-site sources of light or glare may affect your proposal?

No off-site sources of light or glare would affect this proposal.

d. **Proposed measures to reduce or control light and glare impacts, if any:**

School Operations: Lighting would be designed to minimize spillover to adjacent properties. Lighting would comply with the requirements of SMC 23.44.022.J. There will be restrictions on the reader board for allowable uses such as school announcements and adherence to lighting and screening requirements. The code does not allow for flashing, changing-image or message board signs in single-family zones. The project proposes one single sided, electric changing image message board sign on Columbian Way S frontage.

12. **Recreation**

a. **What designated and informal recreational opportunities are in the immediate vicinity?**

Recreational opportunities on the Mercer Middle School site currently include an outdoor courtyard and indoor gymnasium. The school uses the City-owned Jefferson Playfield adjacent to the project site for many of its outdoor athletic needs.

Parks and recreational opportunities in the vicinity of the Mercer Middle School include the following:

- **Jefferson Park.** Located north of/adjacent to Mercer Middle School, the City-owned park includes the Jefferson Park Golf Course, Jefferson Community Center, Jefferson Lawn Bowling, Jefferson Skate Park, and Beacon Mountain. Additional amenities include basketball courts, tennis courts, soccer field, baseball field, picnic sites, spray parks, views, public art, children play area, bathrooms, and water fountains.
- **Beacon Food Forest.** A 7-acre food forest and community-driven garden located on S Dakota Street, west of the project site-adjacent to Jefferson Park. It is located on City-owned land. Amenities include raised beds, demonstration gardens, giving gardens, honeybees, meeting spaces, orchard, and public art.
- **Maple Wood Playfield.** Located approximately 0.6 mile southwest of the project site at 4801 Corson Avenue S. It is a City-owned park. Amenities include two baseball fields, play area, open green space, and bathrooms.
- **Cheasty Boulevard, Mount View, and Greenspace.** City-owned park and recreation spaces located approximately 0.9 mile east of the project site. Amenities include trails and green spaces. Restoration efforts are underway to restore areas overgrown with invasive species.
- **Bicycle Lane.** A bicycle lane on S Columbia Way passes directly in front of the existing entrance to the school.

Seattle Department of Parks and Recreation (Parks) facilities and parks are subject to the Joint Use Agreement between Parks and SPS (SPS 2021) and the Joint Athletic Facilities Development Program.

Currently there are no outdoor recreation spaces for students on the school site other than paved courtyard areas.

b. Would the proposed project displace any existing recreational uses? If so, describe.

Access to Jefferson Playfield from the south may be temporarily impacted by construction activities; however, access would still be available to the community from the northern part of the fields during the construction period.

There are no existing recreational uses on the school site that are expected to be displaced.

c. Proposed measures to reduce or control impacts on recreation, including recreational opportunities to be provided by the project or applicant, if any:

The plans include outdoor recreation spaces for the students including one or more half-basketball courts, a soccer field, outdoor hard and soft surface play areas, nature play areas, outdoor learning structure, learning garden, a gymnasium, and fitness room. The overall area of recreational space would increase over existing conditions and the recreational opportunities for students would greatly increase over the opportunities provided in the current school design. In addition, the new school site would provide outdoor connections to nature and spaces for students to gather and socialize.

Construction: SPS would comply with BMPs to minimize construction noise, dust, and transportation issues during construction, reducing potential disruptions to recreational users. SPS would coordinate construction schedules with Parks to minimize disruptions to park use.

13. Historic and Cultural Preservation

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers located on or near the site? If so, specifically describe.

No recorded buildings, structures, or sites located on or near the site are currently listed in the National Register of Historic Places (NRHP), Washington Heritage Register, or Seattle Landmarks List.

Mercer Middle School was constructed in 1957 and designed by John Maloney with engineers John B. Skilling and Jack Christiansen of Worthington & Skilling Structural Engineers and the Henrik Valle Construction Company (Studio TJP and Bassetti Architects 2021). It is a thin-shell concrete, Mid-Century Modern building composed of two buildings (wings) connected by a covered walkway; each wing is comprised of several masses. The rooflines are a combination of flat and barrel vaults, and generally the facades have continuous three-light metal casement windows over brick veneer or concrete. The school was determined to be eligible for listing in the NRHP in 2011; this was confirmed to

SPS by the Washington Department of Archaeology and Historic Preservation (DAHP) in a letter dated January 6, 2022, that was provided under the Governor's Executive Order 21-02.

In 2021, the Seattle Landmarks Preservation Board determined that the building "does not meet any of the [Seattle Landmarks] designation standards" and did not nominate it for local landmark status (Doherty and Sodt 2021). The landmarks criteria utilized by the City's Landmark Preservation Board for a landmark nomination is similar to the eligibility criteria for listing in the National Register.

Designation under the Seattle Landmarks Ordinance carries with it regulatory authority regarding alterations or demolition of a Landmark. This is acknowledged in the City's SEPA policies, SMC 25.05.675.H and provides that, if a building is designated as a landmark, compliance with Chapter 25.12 (the City's Landmarks Ordinance) shall constitute compliance with SEPA, but "[i]f the project is rejected for nomination [as a city landmark], the project shall not be conditioned or denied for historical preservation purposes."

Parcels adjacent to the project site include buildings, structures, and sites that are over 45 years of age. They include a mix of residential and small commercial structures. Directly to the north of the site is Jefferson Park, which is owned by the City of Seattle (acquired 1898) and contains both a golf course and tennis court, along with other facilities. The project does not propose impacts on any of these adjacent buildings or structures.

There are three buildings near the project site that have been determined eligible for listing in the NRHP by DAHP: the Veterans Affairs (VA) Puget Sound Health Care Hospital, 1517 Snoqualmie Street S, and 1533 Snoqualmie Street S.

The VA Puget Sound Health Care Hospital is directly adjacent to the east, located at 1660 S Columbian Way. The building was constructed 1947–1949 and designed by Perry Johanson of Naramore, Bain, Brady & Johanson and built by Sound Construction & Engineering Co. (Ochsner 2014). It was determined eligible for listing in the NRHP by DAHP in 2021.

1517 Snoqualmie Street S is located approximately 0.17 mile south of the project site. The one-story, single-family residence was constructed in 1911 and features a hip roof, covered porch, horizontal wood siding, and grouped fixed wood frame windows with leaded detail at the top. DAHP determined the building eligible for the NRHP in 2013.

1533 Snoqualmie Street S is located approximately 0.17 mile south of the project site. The single-family Ranch style residence was built in 1950. The single-story building features a low pitch hip roof, attached garage, large, fixed corner window, glass block at the entry, side chimney, and brick facing. DAHP determined the building eligible for the NRHP in 2013.

The project does not propose impacts on the VA Hospital, 1517 Snoqualmie Street S, and 1533 Snoqualmie Street S.

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.**

To date, there are no archaeological sites, cemeteries, or traditional cultural properties within or adjacent to the project boundaries that have been recorded with DAHP.

Research for a cultural resources literature review has been conducted. Findings from this research are summarized here. Apart from the pending cultural resources literature under EO 21-02, no other cultural resources assessments have been conducted within the project boundaries to date. The school was discussed in a 2002 landscape inventory survey of the adjacent Jefferson Park (Schnaiberg and Caywood 2002), but this survey did not include an archaeological assessment. In 1991, an archaeologist responded to the discovery of horse bones and horse shoes identified at the adjacent VA Hospital complex. They were determined to be associated with a former Seattle Fire Department horse barn and were not recorded as an archaeological site (Wessen 1991). In 2013, a cultural resources survey was completed directly southwest of the project for cellular antenna replacements; this survey did not include an archaeological assessment (Buehner 2013).

More than a dozen cultural resources assessments have been completed within 1 mile of the project boundaries, and there are five recorded archaeological sites located between 0.6 mile and 1.0 mile of the project site. All five recorded sites date to 1874 or after, and all have been determined not eligible for listing in the NRHP. The project location is classified in the DAHP Statewide Predictive Model as High Risk for containing precontact-era cultural resources (DAHP 2022). However, there are no recorded archaeological sites with Indigenous components within 1 mile of the project site.

Mercer Middle School is located within the ancestral lands of the Duwamish people, whose traditional language is Southern Lushootseed and who are part of a larger cultural group known generally as the Southern Coast Salish people (Lane 1975a; Suttles and Lane 1990). The Southern Coast Salish group encompasses the Duwamish, Snoqualmie, Suquamish, and Tulalip Tribes, and additional groups in the Puget Sound region whose ancestral lands were primarily farther from the project site: the Puyallup, Nisqually, and Squaxin people (Suttles and Lane 1990). The memberships of the Snoqualmie Indian Tribe, Suquamish Tribe, Muckleshoot Indian Tribe, and Tulalip Tribes include successors of the Duwamish at the time of the 1855 Treaty of Point Elliott (Lane 1974; Lane 1975b; Lane 1988; Miller and Blukis Onat 2004:24-25, 56-108; Muckleshoot Indian Tribe 2022; Suquamish Tribe 2015). The Duwamish, Snoqualmie, and Suquamish Tribes state they have been in the Puget Sound region since time immemorial; this is also supported by archaeological evidence

within the region (Duwamish Tribal Services 2018; Kopperl et al. 2016; Snoqualmie Indian Tribe 2020; Suquamish Tribe 2015).

Today's Beacon Hill landform is known in Lushootseed as *qWátSééCH* or Greenish-Yellow Spine, in reference to the colors of the hillside's deciduous trees, which consisted of maples, alders, and other deciduous trees (Thrush 2007:230, map no. 38; U.S. Surveyor General 1861). No places with Lushootseed names are known to exist directly within the project boundaries (Hilbert et al. 2001; Thrush 2007; Waterman 1922). Named places are documented approximately 0.50 mile west of the project along the base of today's Beacon Hill and the original banks and mouth of the Duwamish River. Approximately 2 miles south of the project location was a trail over Beacon Hill leading between the locations on the Duwamish River and Lake Washington shoreline (Thrush 2007:246).

The project site is approximately 0.33-mile west of the former Road from Steilacoom to Seattle, also known as the Old Military Road (U.S. Surveyor General 1861). A trail once connected with the road approximately 0.40-mile northeast of the project. This trail led east to today's Seward Park on Lake Washington. The road and trail are depicted on annotated historic maps prepared by local historian David Buerge and provided to SPS as part of a hearing for a separate SPS project (Rainier Beach High School Replacement). The provided maps do not show any roads or trails crossing through the project site.

The historical context of the project site is discussed in detail within the school's Seattle Landmarks nomination report and in the existing Beacon Hill Historic Context Report (Studio TJP and Bassetti Architects 2021; Tobin 2004). The property is within the original boundaries of Seattle's Jefferson Park.

Between 1892 and 1914, the City operated an isolation hospital (historically referred to as "pesthouses") for patients with infectious diseases such as smallpox; a map shows the pesthouse and an unidentified outbuilding approximately 0.30-mile east of the project site, on the opposite side of Beacon Avenue (Baist Map Company 1912; McKee and Reynolds 1894; Tobin 2004). The 1911 preliminary plan for Jefferson Park prepared by the Olmsted Brothers landscape design firm shows the boundaries of the City Poor Farm, which encompassed today's school site. The Poor Farm included a Working Men's Home in the southwest corner, now the location of the Beacon Hill Presbyterian Church, and a Temporary Stockade in the southeast corner, now part of the VA Hospital campus (Olmsted Brothers 1911). The hospital and stockade were razed in 1918 (Tobin 2004).

The City annexed Beacon Hill in 1907 and opened Jefferson Park in 1915, which included the City's first municipally operated golf course. It was constructed using laborers from the Poor Farm (Tobin 2004). The project site was temporarily used during WWII for army purposes and later developed into a nine-hole golf course. In 1945, the City deeded 44 acres of Jefferson Park to the federal government for the establishment of a new Veterans Administration Hospital. A portion of the 44

acres was transferred back to the City in 1954 for construction of the new school. Prior to construction of the school, aerial photographs show the project site in use as a golf course with open fields and sparse trees (NETROnline 2022; Pacific Aerial Surveys 1937; Thompson and Marr 2002).

Beacon Hill, on which the project site is situated, is a glacial drumlin unlikely to have experienced substantial natural deposition since the end of the last Ice Age. As a result, past cultural traces, if deposited, would have tended to remain at ground surface or become shallowly mixed into the topsoil. A preliminary review of archival resources, Light Detection and Ranging (LiDAR) imagery, a preconstruction topographical survey of the proposed school site in 1954 (American Engineering Co. 1954), and 21 geotechnical borings conducted in 1955 and 2021 (GeoDesign Inc. 2021) reveal that the project site contains between 2 and 15 feet of fill overlying glacial till and glaciolacustrine deposits. Site preparation for construction of the original school is interpreted to have involved stripping of topsoils across the property and substantial upslope cutting, followed by backfilling across the property. Because site preparation for original school construction appears to have removed the topsoil, the potential for the project site to contain intact archaeological sites appears low.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

The following information was reviewed: previous archaeological survey reports (DAHP 2022; Wessen 1991), historical maps (Baist Map Company 1912; Bortleson et al. 1980; Kroll Map Company 1920; McKee and Reynolds 1894; Olmsted Brothers 1911; U.S. Surveyor General 1861), government landowner records (U.S. Bureau of Land Management 1995), aerial photographs (NETROnline 2022; Pacific Aerial Surveys 1937), published ethnographies and regional histories (Burke Museum 2019; Duwamish Tribal Services 2018; Hilbert et al. 2001; Studio TJP and Bassetti Architects 2021; Kopperl et al. 2016; Lane 1975; Schnaiberg and Caywood 2002; Snoqualmie Indian Tribe 2020; Thompson and Marr 2002; Thrush 2007; Tobin 2004; Waterman 1922), and geological maps and reports (American Engineering Co. 1954; GeoDesign Inc. 2021; King County 2022).

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

SPS anticipates receiving state capital funds from the Washington Office of Superintendent of Public Instruction (OSPI). Use of state funds requires that the project go through additional cultural resources review under Governor's Executive Order 21-02 (EO 21-02, formerly EO 05-05). While separate from SEPA, the EO 21-02 review process requires consultation between SPS and DAHP and Affected Tribes regarding potential impacts on cultural resources,

which include archaeological resources and historic buildings and structures. SPS requested to initiate EO 21-02 Consultation with DAHP, Duwamish Tribe, Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Suquamish Tribe, and Tulalip Tribes via email on January 14, 2022, and hardcopy via certified mail on January 14, 2022, with follow up phone calls to non-responsive Tribes. Dennis Lewarch, Suquamish Tribe Tribal Historic Preservation Office, responded via email on January 14, 2022, to “concur with the ESA recommendation that an Inadvertent Discovery Plan be implemented during construction and that the area has a generally low probability for intact archaeological deposits based on documentation of past construction effects.” Steve Moses, Snoqualmie Indian Tribe Director of Archaeology and Historic Preservation responded via email on January 18, 2022, to “recommend an IDP be prepared.” John Boddy, Duwamish Tribe Council member and Tribal Historic Preservation Officer, responded by email on February 1, 2022, acknowledging receipt of SPS’s letter, and indicating: “All we would ask is that there be an accidental discovery plan in place during construction. I would be happy to visit the site if you wished.”

Due to the low potential for intact archaeological deposits, and the widespread presence of impervious surfaces across the project site, ESA is not recommending a subsurface archaeological survey unless requested by EO 21-02 consulting parties. SPS will prepare an Inadvertent Discovery Plan for use during project construction and ensure that the contractor receives cultural resources orientation prior to beginning ground disturbance. SPS will notify the Duwamish Tribe, Muckleshoot Indian Tribe, Snoqualmie Indian Tribe, Suquamish Tribe, and Tulalip Tribes in advance of construction, and invite the Tribes to observe the work. At all times during construction, state laws regarding cultural resources, including Archaeological Sites and Resources (RCW 27.53), Indian Graves and Records (RCW 27.44), Human Remains (RCW 68.50), and Abandoned and Historic Cemeteries and Historic Graves (RCW 68.60), are in force if archaeological sites or human remains are discovered. Based on the result of the analysis, measures to avoid, minimize, or compensate for the loss of, changes to, and disturbance to resources would be determined based on the nature, location, and potential impacts on any archaeological resource.

In response to SPS’s 21-02 consultation initiation request to DAHP, the DAHP issued a letter to SPS on January 6, 2022, stating: *“Should the building [Asa Mercer Middle School] continue to be NRHP-eligible at the time of construction, and the construction still plan for its demolition, the project as proposed will have an Adverse Impact under 21-02. This would require further consultation and the development of a Memorandum of Understanding (MOU). The MOU shall identify specific measures that when implemented will serve to mitigate the adverse effect on the property.”* SPS is in the process of consulting with DAHP regarding development of an MOU. These measures, when determined, will be incorporated into the project as mitigation.

14. Transportation

A *Transportation Technical Report* (Heffron Transportation Inc. 2022) has been prepared for the proposed project, and the results of the report are summarized in this section. For further details on the *Transportation Technical Report*, refer to Appendix A of this Checklist.

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

The existing Mercer Middle School site is bounded on the east by the VA Hospital, on the north by the Jefferson Park playfield and Jefferson Park golf course, on the west by 16th Avenue S, and on the south by S Columbian Way. The site has vehicular access from three driveways—two on S Columbian Way and one on 16th Avenue S. The school's main parking lot and passenger vehicle load/unload area are accessed from a driveway on S Columbian Way roughly in the middle of the site's frontage. A staff and maintenance parking lot at the northeast corner of the site is accessed from the second driveway on Columbian Way S located at the southeast corner of the site. A gated fire-lane access from 16th Avenue S is located at the northwest corner of the site. A recessed-curb pullout area along the site's 16th Avenue S frontage is designated as the school-bus load/unload area (signed for school buses only from 7 a.m. to 10:100 a.m. and 1 p.m. to 6 p.m.). That area is used as perpendicular on-street parking during other times. There is also a small (4 spaces) automobile school load area painted along 16th Avenue S adjacent to the site north of the school-bus load zone (signed for school-load only from 7 a.m. to 6 p.m.).

The proposed replacement project would reconfigure the site and change site access. An on-site staff and visitor parking lot would be constructed at the south end of the site and would be accessed from one driveway on S Columbian Way; school bus load/unload would be accommodated within in this lot. Family-vehicle load/unload would be relocated to the west of the site in a new on-site one-way loop (entry at the south, exit to the north). The site frontage along the east side of 16th Avenue S would be reconstructed with curb, gutter, and sidewalk. The curb-side parallel on-street parking would be designated for school-load only during morning arrival and afternoon dismissal periods.

Figure 1 in the referenced *Transportation Technical Report* shows the proposed site elements, including the new on-site school bus load/unload loop, the proposed new on-site passenger vehicle load/unload loop, site access, and planned frontage improvements.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

Yes, King County Metro Transit (Metro) provides bus service along 15th Avenue S, S Columbian Way, and Beacon Avenue S to the east. There are several Metro bus stops located adjacent to or close to the school site. A stop serving

northwest-bound Route 50 buses is located on S Columbian Way adjacent to the southeast portion of the school site. Another stop serving northwest-bound Route 50 buses is located on S Columbian Way immediately west of 16th Avenue S (about 75 feet from the southeast corner of the school site). Additional stops serving Route 50 are located less than 150 feet from the southwest corner of the school site on S Columbian Way at the 15th Avenue S intersection and less than 250 feet from the southeast corner of the site on S Columbian Way near the Veteran Hospital Drive intersection. Stops serving Routes 60 and 107 are located less than 350 feet from the southwest corner of the school site on both sides of 15th Avenue S south of S Oregon Street. Table 5 in the referenced *Transportation Technical Report* summarizes transit service provided within 0.5 mile of the project site.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

The existing school has two on-site parking lots with a combined striped parking supply of 92 spaces. The main lot, with 72 spaces, is located in the southwest corner of the site; a staff lot is located at the northeast corner of the site and is accessed from the eastern driveway on S Columbian Way.

The project would reconfigure the site and change the location and number of on-site parking spaces. The new Mercer Middle School is proposed to have 72 on-site staff and visitor parking spaces for regular school-day use within its main parking lot. Both the family-vehicle and school-bus load/unload areas could be used for parking on evenings and weekends for events. In total, the site would have 97 parking spaces for event conditions (72 spaces in the main lot, 12 spaces in the automobile load/unload area, and 13 spaces in the school-bus load/unload area).

As part of the frontage improvements required by SDOT along the east side of 16th Avenue S, the project would construct curb, gutter, and sidewalk. The curbside is expected to be available for parallel on-street parking that would be signed for school-load only during peak arrival and dismissal periods. This curbside reconfiguration would reduce the parking capacity along the frontage from 39 spaces (including 35 perpendicular stalls) to 21 parallel spaces. The reconfigured parking is expected to be signed for short-term school-load only during the morning arrival and afternoon dismissal periods but would be available for visitor or other public parking during other times. No other changes are proposed that would affect the on-street parking supply.

A detailed study of parking conditions was prepared and is presented in the referenced *Transportation Technical Report* (Appendix A). As presented in that report, the replacement school with enrollment of up to 1,000 students could generate school-day demand ranging from 79 to 93 vehicles based on parking demand counts performed on site in 2021 and from historical aerial images taken 2017 and 2019.

With the proposed on-site supply, the replacement school could generate excess demand of about 3 or 4 vehicles that may occur along on-street parking in the site vicinity—like existing conditions. Detailed analysis of on-street parking utilization is presented in the referenced *Transportation Technical Report*. The added parking demand would most likely occur on-street in areas nearest the school that have unrestricted parking on school days. Based on the parking utilization study performed around the school, there were between 120 and 135 unused, unrestricted on-street parking spaces within 800 feet of the school site. The minor increase in overspill demand combined with the loss of parking along 16th Avenue S due to frontage improvement requirements would slightly increase utilization from 52% to 58%. However, this level is acceptable to the City and the project-related impacts would not be considered significant.

The school would continue to host events periodically throughout the school year, and the project is not expected to increase the frequency or attendance of these events. The proposed replacement school would have capacity (1,000 students) that is lower than its current capacity with 25 portables (1,296 students) and lower than its recent enrollment levels (over 1,100 students from 2015 through 2020). As a result, event-related parking impacts are expected to be improved compared to prior years. Many of the school events would have relatively modest attendance including PTSA monthly board meetings and monthly general membership meetings, parent meetings for clubs, and film screening nights. Larger events could include the Winter Concert, Math Night, Science Night, Multicultural Night, Jazz, Band, and Orchestra Concerts, Talent Shows, and/or fundraising events. The largest evening events held for middle schools are typically the annual Open House (Curriculum Night) in late September.

The on-street parking survey results indicated an average of 134 unused on-street parking spaces (out of 275 total) in the school vicinity on evenings without events at the school. With the reduction in supply expected from the 16th Avenue S frontage reconfiguration, on-street supply in the study area could be reduced to 257 spaces. Up to 77 additional spaces could be utilized before the study-area reaches 85% occupancy, which is the level at which the City considers parking to be effectively full and may examine additional parking management measures.

Observations conducted by Heffron Transportation staff at other schools have found typical larger evening events have between 3 and 3.5 attendees per parked vehicle, factoring in multiple attendees that arrive in one vehicle (e.g., students with families) and attendees that may be dropped off at an event without generating parking demand. Based on these rates, the available parking supply (97 on-site spaces, and 77 on-street spaces) would be sufficient to accommodate occasional events with between approximately 520 and 610 people before on-street parking utilization reaches 85% occupied. However, event parking demand and on-street overspill conditions with the replacement school are expected to be the same or better than the existing school.

d. **Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).**

Yes. Based on extensive coordination with SDOT, the project would make several improvements and changes to access and roadway frontages. Those changes are shown on **Figure 1** of the referenced *Transportation Technical Report* and are listed and described below.

- **Staff and visitor parking** would be consolidated to one new lot and accessed from one driveway on S Columbian Way. The new access is expected to be restricted to right-in/right-out only with new C-curb installed in the center of S Columbian Way.
- **School-bus load/unload** would occur on-site within the on-site staff/visitor parking lot. Buses would share the staff/visitor parking driveway on S Columbian Way that would be restricted to right-in/right-out only movements.
- **Passenger-vehicle load/unload** would occur in a new on-site facility constructed on the west side of the site with one-way entry at the south and exit at the north.
- **16th Avenue S** frontage would be reconstructed with new curb, gutter, sidewalk, and parallel on-street parking as required by SDOT through the Street Improvement Permit (SIP) process. This curb-side parking is anticipated to be signed for school load during peak arrival and dismissal periods on school days but be available for parking during other times.
- **Fire and service/delivery access** would extend from the main parking lot around the east side of the buildings and from 16th Avenue S along the north edge of the site.
- **S Columbian Way/16th Avenue S** intersection would be slightly reconfigured to create a 90-degree approach to S Columbian Way with curb-bulbs to minimize pedestrian crossing distances. Turns to and from S Columbian Way at 16th Avenue S would be restricted to right-only with the installation of C-curb in the center of S Columbian Way.
- **S Columbian Way** frontage segments would also be improved as required by SDOT through the SIP process. As part of those improvements, the project would relocate and reconstruct the Metro transit stop currently located at the southeast corner of the site. The new stop would be moved northwest of the existing stop and would allow for in-lane bus stops with a raised boarding platform, bike lane, curb and sidewalk, and bus shelter. The improvement is expected to include new C-curb within the center of S Columbian Way to prevent drivers from using the center turn lane to drive around stopped Metro buses.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

The project would not use or occur in the immediate vicinity of water or air transportation. However, the King County International Airport-Boeing Field is located southwest of the site across Interstate 5 (I-5) about 2 miles away. The Union Pacific Railroad's Argo Yard (UPRR intermodal railroad facility) is located across I-5 to the west about 1 mile away.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

The traffic analysis conducted for this SEPA Checklist reflects conditions with the Mercer Middle School Project complete and operating at its proposed capacity of 1,000 students – a decrease in capacity of nearly 300 students, a decrease of about 145 students compared to the school's average enrollment over the past 6 years, and an increase of 14 students compared to enrollment in the 2021–22 school year. Based on adjusted daily trip generation rates published for middle schools by the *Institute of Transportation Engineers*, the replacement school is estimated to generate a net increase of about 30 trips per day (15 in, 15 out) compared to the existing site in 2021–22, but a decrease in daily trips compared to conditions over the previous six years. Peak traffic volumes would continue to occur in the morning just before classes begin (between 8 and 9 a.m.) and in the afternoon around dismissal (between 3:15 and 4:15 p.m.).

Based on information provided by SPS Transportation staff, the replacement school is expected to be served by four full-size school buses and up to seven smaller special education (SPED) buses. Other truck trips expected to continue serving the site include deliveries of food and supplies, trash and recycling pick-up, and occasional maintenance. Overall, school buses and small trucks likely represent about 3 percent of the total daily traffic.

For more information about the anticipated school traffic generation, refer to Appendix A.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

The proposal would not interfere with the movement of agricultural or forest products on streets in the area because no agricultural or working forest lands are located within the vicinity of the project site.

h. Proposed measures to reduce or control transportation impacts, if any:

Although the proposed Mercer Middle School Project would not adversely affect the transportation system in the site vicinity, the following measures have

been incorporated into the proposal to reduce the traffic and parking impacts with the project.

Short-Term Conditions – Construction

- A. **Construction Transportation Management Plan (CTMP):** The District would require the selected contractor to develop a Construction Transportation Management Plan (CTMP) that addresses traffic and pedestrian control during each major construction phase of the new facility. It will define truck routes, lane closures, walkway closures, and parking or load/unload area disruptions, as necessary. To the extent possible, the CTMP would direct trucks along the shortest route to arterials and away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity. The CTMP may also include measures to keep adjacent streets clean daily at the truck exit points (such as street sweeping or on-site truck wheel cleaning) to reduce tracking dirt off site.

Long-Term Conditions – Operations

- B. **School Transportation Management Plan (TMP):** Prior to opening the replacement school, the District and school would develop a Transportation Management Plan (TMP) to educate parents and students about the preferred access and circulation patterns for the interim school. This would include directing family drivers to use 16th Avenue S as a northbound-only route when driving students to school in the morning or picking students up from school in the afternoon.
- C. **Develop Neighborhood Communication Plan for School Events:** The District and school administration would develop a neighborhood communication plan to inform nearby neighbors of large events each year (those expected to draw 500 people or more). The plan would be updated annually (or as events are scheduled) and would provide information about the dates, times, and rough magnitude of attendance. The communication would be intended to allow neighbors to plan for the occasional increase in on-street parking demand that would occur during large events.
- D. **Update Right-of-Way and Curb-side Signage:** The District would work with SDOT to confirm the locations, extent, and signage (such as times of restrictions) of the school load zone along 16th Avenue S.
- E. **Coordinate with Metro Transit:** The District would coordinate with Metro to confirm transit service availability and capacity.

15. Public Services

- a. **Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.**

Construction: Construction activities would not create an increased need for public services.

School Operations: The proposed project would maintain capacity similar to the current enrollment of approximately 1,000 students with approximately 108 employees; therefore, school operations would not create an increased need for public services.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Construction: Construction vehicles and heavy equipment would use local roads, and there could be temporary detours and traffic delays. Access to all residential and commercial properties near the project site would be maintained during construction.

Local public service providers would be made aware of any potential roadway impacts that could adversely affect response times. Transportation plans would include provisions to maintain emergency service access.

School Operations: No mitigation is proposed due to no anticipated increase in impacts.

16. Utilities

a. Underline utilities currently available at the site:

Existing utilities currently at the site include electricity, natural gas, water, refuse service, telephone, storm drain, and sanitary sewer.

b. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

School Facilities. Existing utilities would be demolished, and new utility services would be installed to serve the new buildings and associated facilities.

Electricity, water, refuse service, telephone, storm drain, and sanitary sewer would continue to be provided to the school. This may include trenching and minor excavation and would be part of the overall construction at the site.

Construction impacts on utilities would generally be associated with temporary disruptions to overhead or underground utility services. During excavation, underground utilities such as water and sewer lines could be encountered, and localized service disruption may occur. Overhead utility lines that are located on the perimeter of the project site, including electricity, cable, and telephone lines, would not be affected during construction. Disruptions to overhead utilities could occur as utility lines are connected to new facilities. These disruptions would be short-term and coordinated with the utility provider. Utility providers would be consulted prior to demolition, excavation, and other digging activities to ensure that utility lines are unaffected during construction.

The following specific actions are planned for the project:

- **Sanitary Sewer Service.** The sanitary sewer service is provided by Seattle Public Utilities (SPU). An existing 12-inch side sewer service is located at the

southwest corner of the site, which may require remediation. Remedial efforts may include replacing a portion of the pipe or providing a trenchless solution, such as pipe lining.

- The proposed 6-inch PVC side sewers for the proposed school would connect to the existing 12-inch side sewer. A grease interceptor would also be installed to capture grease from kitchen waste.
- **Gas.** The existing gas line and meter would be decommissioned. New gas service is not proposed for the new building.
- **Green Stormwater Infrastructure.** Design measures include the incorporation of green infrastructure to reduce flows into the City's stormwater system. The site does not have an existing connection to the 12-inch reinforced concrete pipe separated storm main within S Columbian Way and has historically discharged stormwater to the sanitary sewer service. The project would be required to separate storm and sewer and provide new side storm service connection to the storm main in S Columbian Way.
- **Electrical.** New electrical utility services would be installed to serve the new building location on the west side of the building derived off of 16th Avenue S.
- **Water and Fire Service.** SPU provides water and fire services. An existing 6-inch domestic service is provided from 15th Avenue S, although it is likely the project may require installing a new 8-inch or 12-inch service line. The project would replace the domestic meter with a combination meter and using this as both the domestic and fire service connection. A Fire Department Connection (FDC) is proposed along the main access drive to the parking lot per International Fire Code. A new private fire hydrant is proposed on the east side of the building just north of the fire turn around near the service yard. An existing 8-inch asbestos cement water service from 15th Avenue S and serving the VA Hospital is located on-site. This water service conflicts with the proposed buildings. The water service was abandoned in place based on information from SPU that indicates water usage that would be expected from an abandoned system. The School District would coordinate with the VA Hospital on meter decommissioning by SPU. Once the meter is decommissioned, the asbestos cement pipe would need to be demolished per hazardous materials specifications and plans.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Vincent R. Gonzales

Name of Signee: Vincent Gonzales

Position and
Agency/Organization: Sr. Project Manager, Capital Projects & Planning

Date Submitted: April 22, 2022

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FIGURES

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SOURCES: ESRI, 2021; ESA, 2021; King County, 2021

SPS Mercer Middle School Replacement

Figure 1
Mercer Middle School Vicinity, Seattle, Washington



Figure 2
Proposed Mercer Middle School Conceptual Site Plan (subject to change)

4.00

PROJECT NORTH

TRUE NORTH

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SOURCES: ESRI, 2021; ESA, 2021; King County, 2021

SPS Mercer Middle School Replacement

Figure 4
Key to View Assessment Figure Locations, Seattle, Washington



Figure 4a
View of Project Site from Private Residence Located at 4322 16th Avenue S, Facing East



Figure 4b
View of Project Site from Private Residence Located at 4336 16th Avenue S, Facing East



Figure 4c
View of Project Site from Business Located at 1625 S Columbian Way, Facing North



Figure 4d
View of Project Site from Jefferson Park Located Directly North of the Existing School,
Facing Southwest

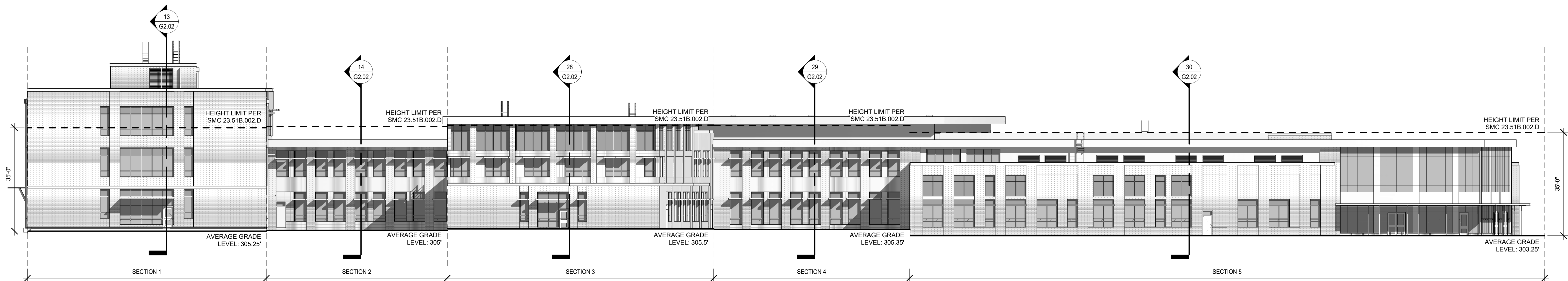


Figure 4e

View of Project Site Facing Southwest from the 5th Hole of the Jefferson Park Golf Course Located at 4101 Beacon Avenue S

SMC 23.51B.002.D.1.b:

For new public school construction on existing public school sites, the maximum permitted height is 35 feet plus 15 feet for a pitched roof. All parts of the roof above the height limit must be pitched at a rate of not less than 4:12. No portion of a shed roof is permitted to extend beyond the 35 foot height limit under this provision.



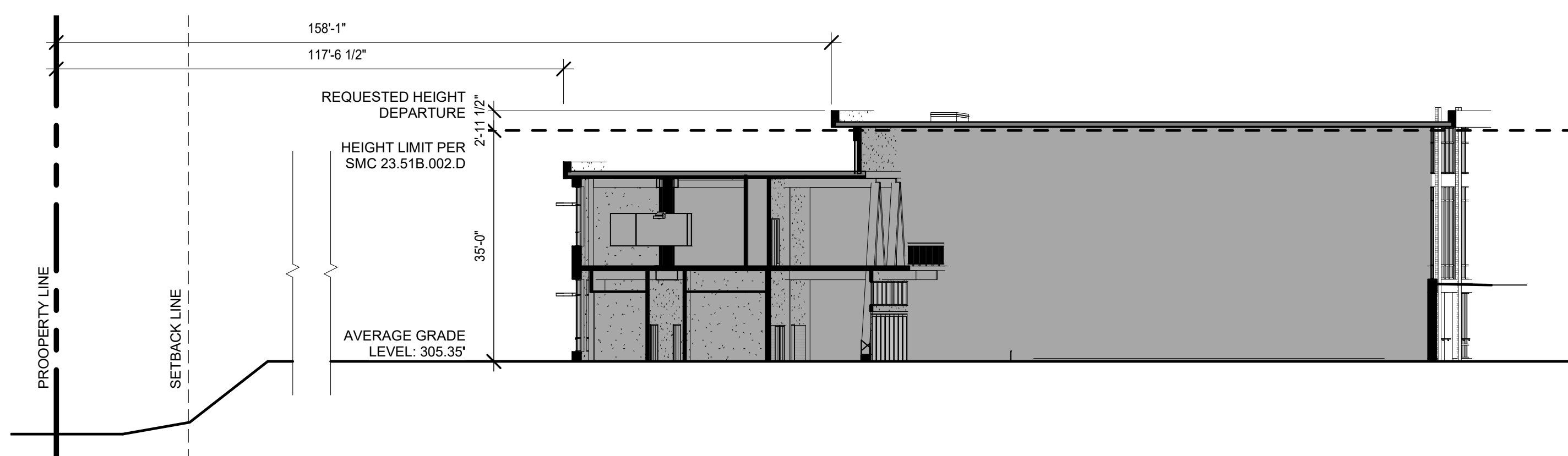
27 CODE DIAGRAM - HEIGHT LIMIT OPTION

1/16" = 1'-0"



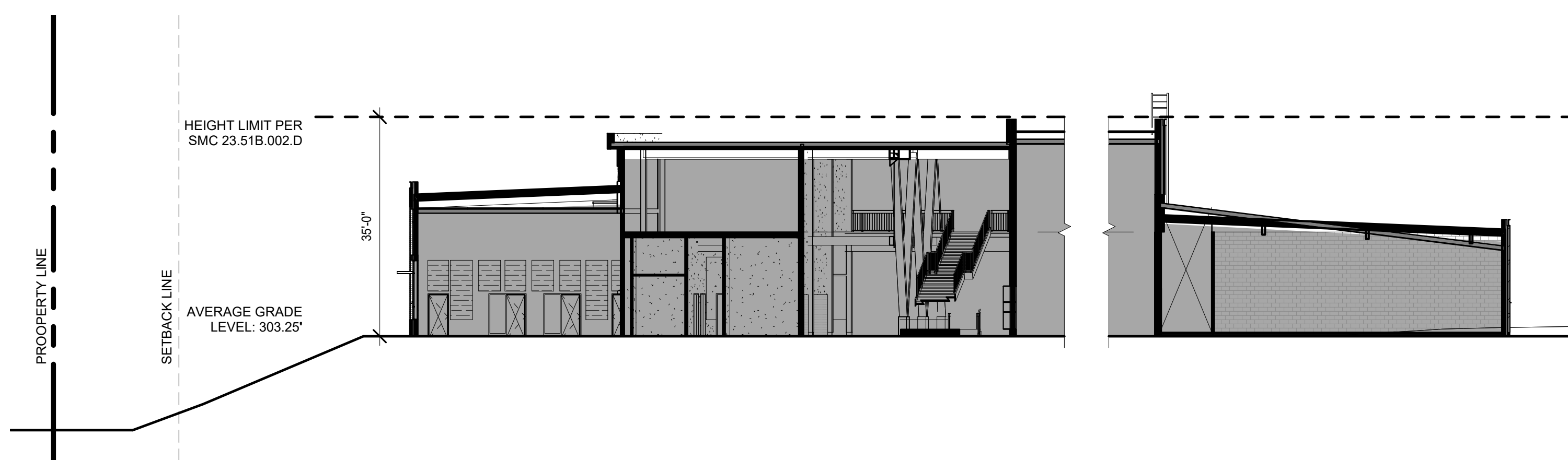
28 CODE DIAGRAM - HEIGHT LIMIT SECTION 3

1/16" = 1'-0"



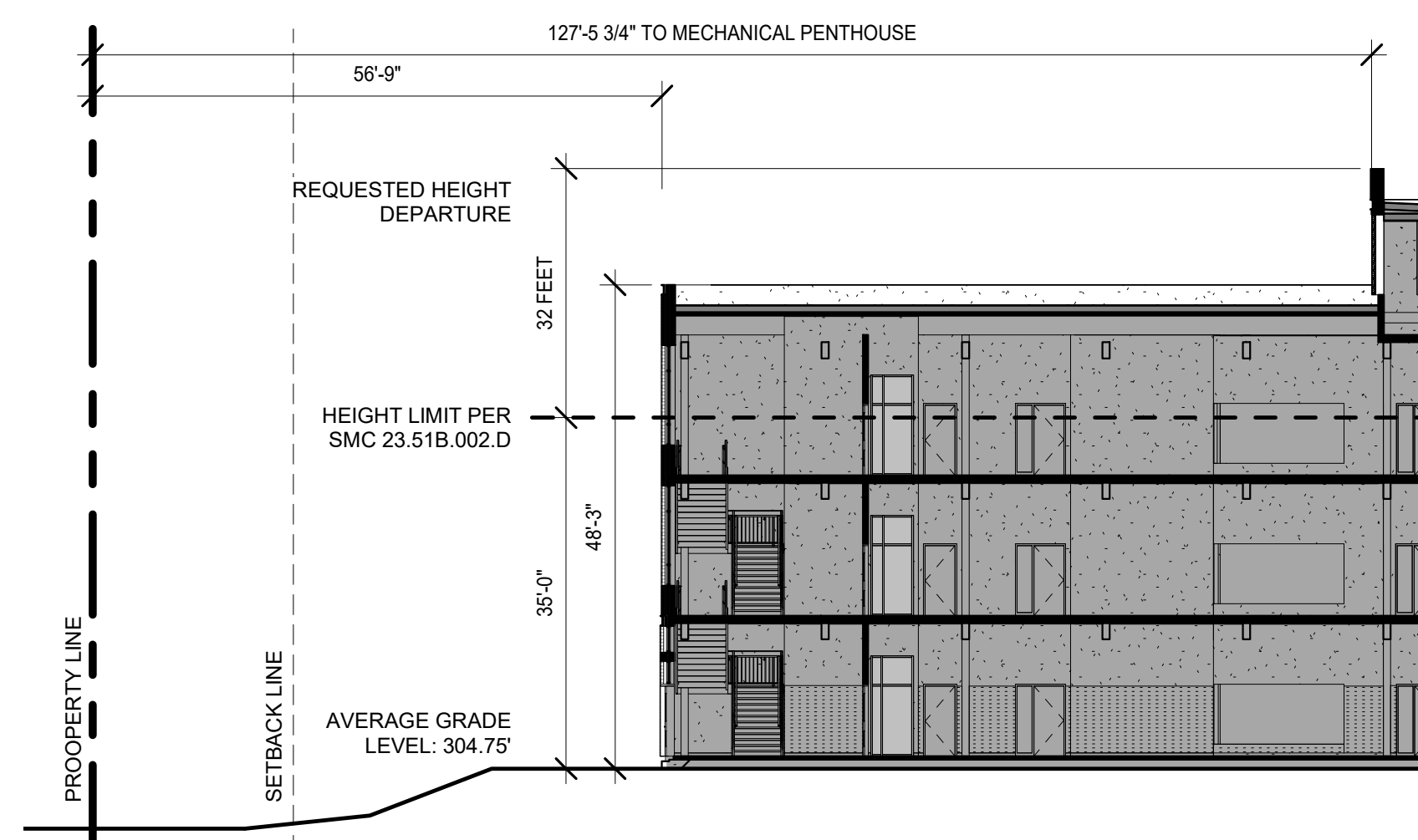
29 CODE DIAGRAM - HEIGHT LIMIT SECTION 4

1/16" = 1'-0"



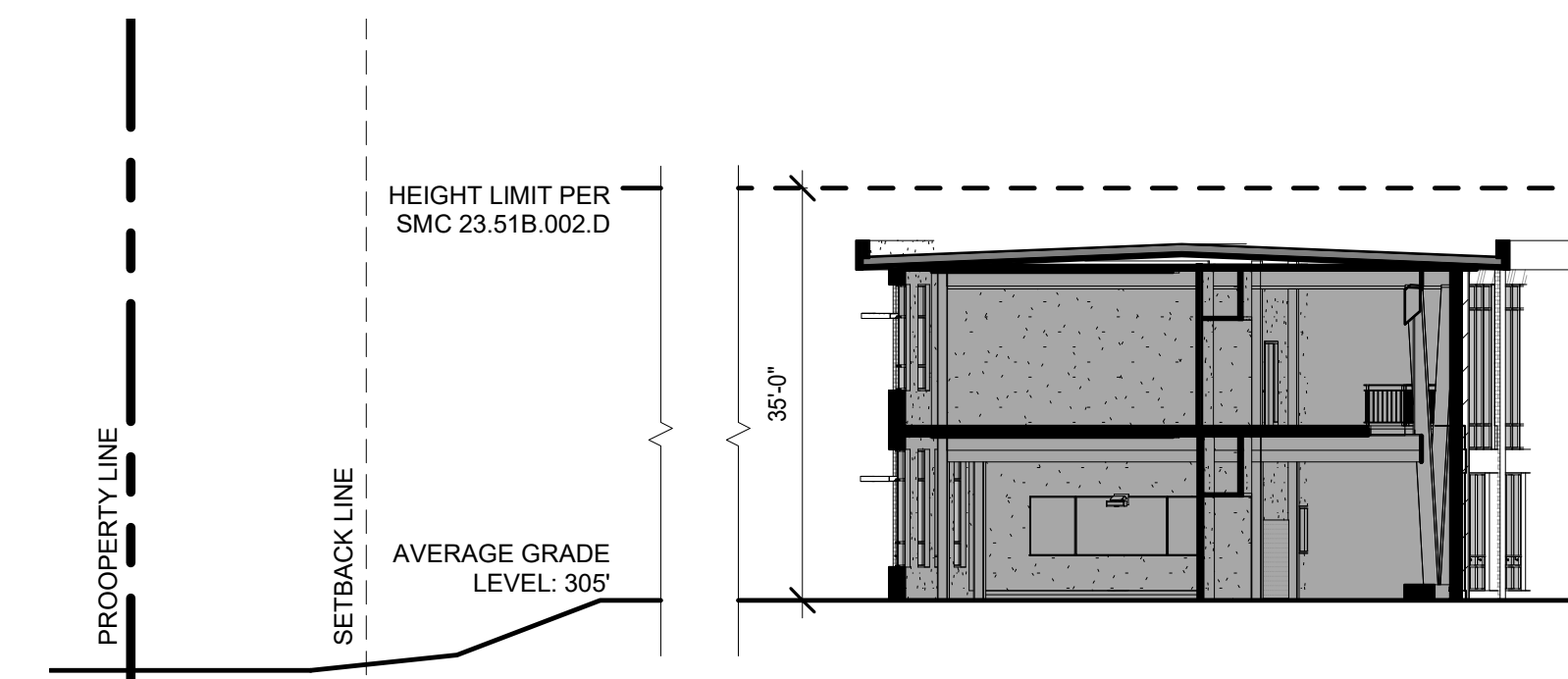
30 CODE DIAGRAM - HEIGHT LIMIT SECTION 5

1/16" = 1'-0"



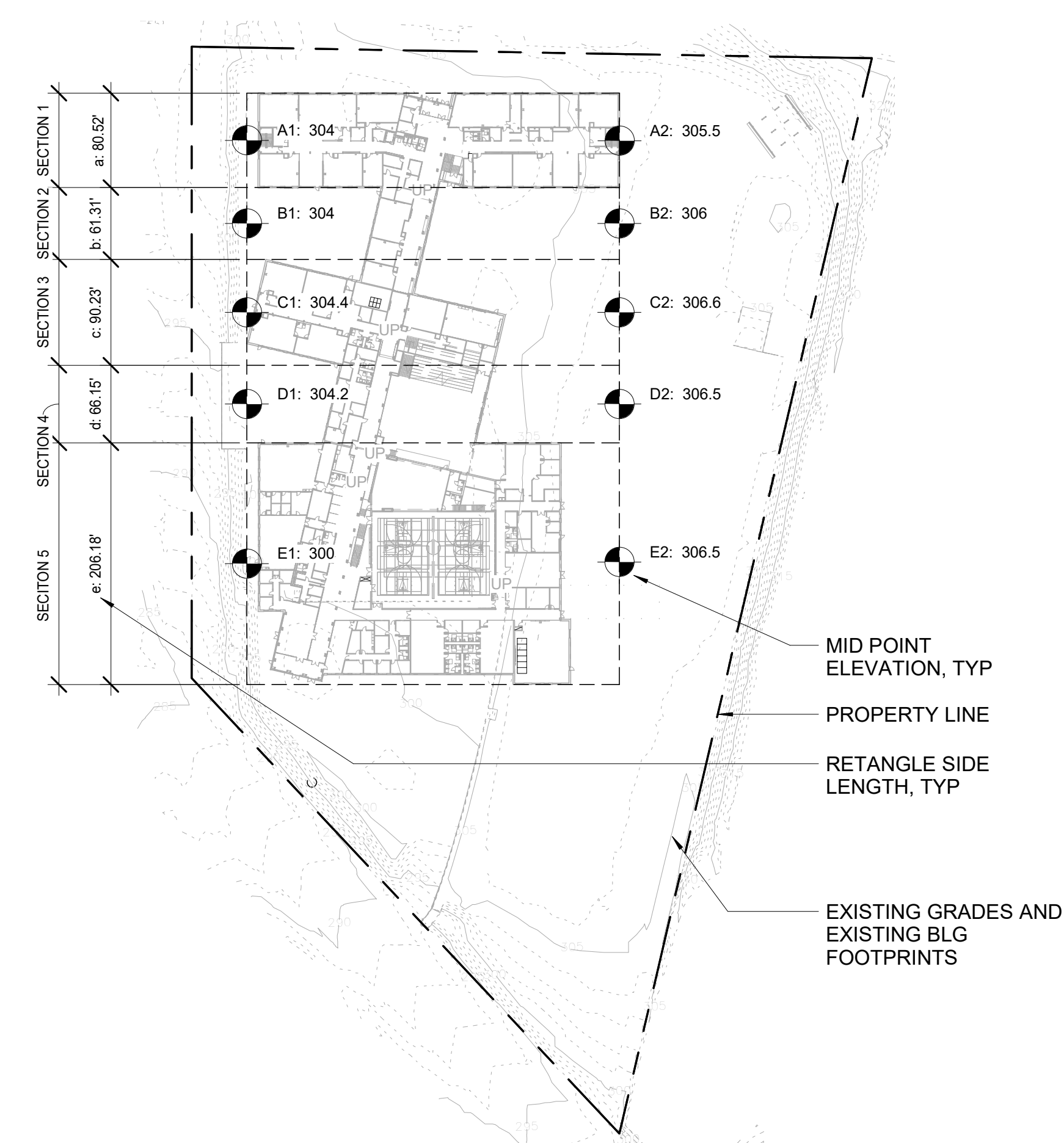
13 CODE DIAGRAM - HEIGHT LIMIT SECTION 1

1/16" = 1'-0"



14 CODE DIAGRAM - HEIGHT LIMIT SECTION 2

1/16" = 1'-0"



AVERAGE GRADE LEVEL
(PER SDCI DIRECTOR'S RULE 4-2021)

OPTION TO GENERAL RULE CALCULATION =
$$\frac{[(X1 \times x) + (X2 \times x)]}{(x + x)} =$$

SECTION 1 =
$$\frac{[(304' \times 80.52') + (305.5' \times 80.52')]}{(80.52' + 80.52')} = 304.75'$$

SECTION 2 =
$$\frac{[(304' \times 61.31') + (306' \times 61.31')]}{(61.31' + 61.31')} = 305'$$

SECTION 3 =
$$\frac{[(304.4' \times 90.23') + (306.6' \times 90.23')]}{(90.23' + 90.23')} = 305.5'$$

SECTION 4 =
$$\frac{[(304.2' \times 66.15') + (306.5' \times 66.15')]}{(66.15' + 66.15')} = 305.35'$$

SECTION 5 =
$$\frac{[(300' \times 206.18') + (306.5' \times 206.18')]}{(206.18' + 206.18')} = 303.25'$$

10 CODE DIAGRAM - AVERAGE GRADE PLANE

1" = 100'-0"

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APPENDIX A: TRANSPORTATION TECHNICAL REPORT

TRANSPORTATION TECHNICAL REPORT

for the
Mercer Middle School Replacement

PREPARED FOR:
Seattle Public Schools

PREPARED BY:



6544 NE 61st Street, Seattle, WA 98115
ph: (206) 523-3939 ♦ www.hefftrans.com

April 4, 2022

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1. INTRODUCTION

This report presents the transportation impact analyses for the Seattle Public Schools' (SPS) proposed replacement of Mercer Middle School. The scope of analysis and approach were based on extensive past experience performing transportation impact analyses for projects throughout the City of Seattle, including numerous analyses prepared for SPS projects. This report documents the existing conditions in the site vicinity, presents estimates of project-related traffic, and evaluates the anticipated impacts to the surrounding transportation system including transit, parking, safety, and non-motorized facilities. These analyses were prepared to support the SEPA Checklist for this project.

At the time of data collection for this analysis in fall 2021, Seattle Schools had returned to five-day, in-person learning after the disruption and school closures caused by the COVID-19 pandemic in 2020-21, which affected traffic volumes and travel patterns throughout Seattle and near the site. Some transportation patterns in the City overall, at the school, and within the local site vicinity have not returned to pre-pandemic conditions. Therefore, the analyses were prepared using baseline traffic data collected for this project in fall 2021 and other data collected in 2019. The volumes were adjusted to reflect representative normalized (non-pandemic) conditions according to standards and practices recommended by the Institute of Transportation Engineers (ITE)¹ and other industry professionals.²

1.1. Project Description

SPS is proposing to replace Mercer Middle School, which is located at 1600 S Columbia Way in the Beacon Hill neighborhood of Seattle. The following sections describe the site and proposal.

1.1.1. Existing Site

The Mercer Middle School site is bounded on the east by the Veterans Affairs (VA) Puget Sound Health Care Complex (VA Hospital), on the north by the Jefferson Park playfield and Jefferson Park golf course, on the west by 16th Avenue S, and on the south by S Columbian Way.

The existing main school building was constructed in 1957 and contains about 122,300 square feet (sf)³ of floor area. Portable classrooms have supported the growing school population since 1963 and in 2021 there were 25 portables on the site. The site has vehicular access from three driveways—two on S Columbian Way and one on 16th Avenue S. The school's main parking lot and passenger vehicle load / unload area are accessed from a driveway on S Columbian Way roughly in the middle of the site's frontage. A staff and maintenance parking lot at the northeast corner of the site is accessed from the second driveway on S Columbian Way located at the southeast corner of the site. A gated fire-lane access from 16th Avenue S is located at the northwest corner of the site. A recessed-curb pullout area along the site's 16th Avenue S frontage is designated as the school-bus load/unload area (signed for school buses only from 7:00 A.M. to 10:00 A.M. and 1:00 P.M. to 6:00 P.M.). That area is used as perpendicular on-street parking during other times. There is also a small (4 space) automobile school load area painted along 16th Avenue S adjacent to the site north of the school-bus load zone (signed for school-load only from 7:00 A.M. to 6:00 P.M.).

According to information published in *Building for Learning, Seattle Public Schools Histories, 1862-2000*,⁴ the Asa Mercer Junior High School opened in 1957 with enrollment of 1,093 students and included an 800-seat auditorium. It was named for Asa Shinn Mercer, who was the younger brother of Thomas Mercer who was influential in the growth of Seattle as a young city. In 1949, the city deeded a large tract

¹ ITE, *What a Transportation Professional Needs to Know About Counts and Studies during a Pandemic*, July 2020.

² Kittelson & Associates, *Estimating Traffic Volumes Under COVID-19 Pandemic Conditions*, April 2, 2020.

³ C. Hendricks, BroadView Associates, Ltd., March 2022.

⁴ Nile Thompson and Carolyn J. Marr; *Building for Learning, Seattle Public Schools Histories, 1862-2000*; 2002.



to the Veterans Administration for a hospital, and in 1954 a portion was returned to the city to construct the school. Additional acreage was deeded to SPS by the Parks Department to allow for a playfield and a fieldhouse. Some fairways of Jefferson Park Golf Course were also relocated. Enrollment exceeded 1,500 students during the 1963-64 school year, when there were 18 portable classrooms on the site. The school's current operational capacity is 1,296 students⁵ including capacity provided by the existing 25 portable classrooms. Enrollment in November 2021, when new traffic counts were taken for this analysis, was 986 students,⁶ but averaged 1,144 students from 2015 to 2020. The school currently has 108 full-time employees,⁷ including teachers, instructional assistants, administrators, and operations staff. School hours are 8:55 A.M. to 3:45 P.M. with early release at 2:30 P.M. on Wednesdays.

1.1.2. Proposed Site Changes

The proposed project would reconfigure the existing site and construct a multi-level building with about 180,000-sf and capacity to accommodate up to 1,000 middle school students in grades 6 through 8. This is a decrease from the school's current capacity (with its 25 portables) of 1,296 students, but it is similar to the current enrollment. SPS expects that the staffing level will remain about the same as existing: 108 full-time employees.⁸ The new school building will house 50 classrooms, 2 music rooms; an art/project lab; a gymnasium and associated PE spaces; a dining commons area; learning commons areas; offices; a health center; and other support and building infrastructure space. There will also be a small synthetic field area for some PE activities. The proposed replacement school would have a dining commons with capacity for about 600 when configured for an assembly or performance and a gymnasium with bleachers that could accommodate about 600 people.

An on-site staff and visitor parking lot would be constructed at the south and east portions end of the site and would be accessed from one driveway on S Columbian Way; school-bus load/unload would be accommodated within this lot. Family-vehicle load/unload would be relocated to the west of the site in a new on-site one-way loop (entry at the south, exit to the north). The site frontage along the east side of 16th Avenue S would be reconstructed with curb, gutter, and sidewalk. The curb-side parallel on-street parking would be designated for school-load only during morning arrival and afternoon dismissal periods. Automobile parking for 72 vehicles would be provided on site for regular school-day use; the on-site family-vehicle load/unload area could be used for parking during the school day. Both the family-vehicle and school-bus load/unload areas could be used for parking on evenings and weekends for events. In total, the site would have 97 parking spaces for event conditions (72 spaces in the main lot, 12 spaces in the automobile load/unload area, and 13 spaces in the school-bus load/unload area). The proposed replacement school would also have 232 bicycle parking spaces (174 long-term covered and secured spaces and 58 short-term spaces).

Construction is planned to begin in summer 2023, with the new school planned to be open in fall 2025. Future analyses (without and with the project) presented in this report reflect year 2025 conditions. During construction, students, faculty and staff will be relocated to the Van Asselt School interim site located at 7201 Beacon Avenue S. Figure 1 shows the site plan with the location of the proposed building, parking areas, access location, and frontage improvements.

⁵ SOJ citing *2021 Facilities Master Plan Update, Appendix E: 2020 School Capacity Charts*, p. 45, Jan. 14, 2022.

⁶ SPS P223 Enrollment Report, October 2021.

⁷ SOJ, Jan. 14, 2022.

⁸ SOJ communication with Principal, January 14, 2022.





Source: Bassetti Architects, March 7, 2022

2. BACKGROUND CONDITIONS

This section presents the existing and future conditions without the proposed project. The impacts of the proposed project were evaluated against these base conditions. For comparison, and to provide an analysis of potential changes to traffic and parking impacts, year 2025 without-project conditions assume Mercer Middle School would continue operating with its current enrollment (986 students) even though the current capacity is 1,296 students. The following sections describe the existing roadway network, traffic volumes, traffic operations (in terms of levels of service), traffic safety, transit facilities, non-motorized facilities, and parking.

Figure 2 shows the project site location and vicinity. Because the proposed school would have a lower capacity than currently exists, the transportation study focuses on the how changes to the on-site parking and loading as well as site access locations would affect near-site roadways and intersections. The following five off-site intersections plus the site's access driveways were selected for study based on the changes proposed, local traffic counts, and travel routes used by family drivers, buses, and staff to access and egress the site area.

- S Columbian Way / S Oregon Street
- 15th Avenue S / S Oregon Street
- S Columbian Way / Veteran Hospital Drive
- 15th Avenue S / S Dakota St
- 16th Avenue S / S Columbian Way

2.1.1. Existing Network

The surrounding area predominantly consists of single-family residences to the west and south, Jefferson Park to the north, and the VA Hospital to the east. Key roadways that serve the site are described below. Roadway classifications are based on the City's Street Classification Map.⁹ Speed limits are 25 miles per hour (mph) on arterials (unless otherwise marked) and 20 mph on local access streets.

S Columbian Way is a northeast-southwest oriented Principal Arterial that connects from Interstate-5 (I-5) to a short, two-block segment of 15th Avenue S. It then connects from 15th Avenue S east to S Alaska Street before bending northeast as a Minor Arterial and terminating at Martin Luther King Jr Way S. The roadway has one travel lane in each direction, with turn pockets at select intersections, and dedicated bicycle lanes on both sides of the street. Between 16th Avenue S and Veteran Hospital Drive, there is in-street separation between the vehicle and bicycles lanes. There are sidewalks on both sides of the street. Near the school, there is a 20-mile-per-hour (mph) school zone enforced when beacons flash. No parking or stopping is allowed on either side of the street at any time.

15th Avenue S is a north-south arterial that connects between Golf Drive S on the north (near the Interstate 5 / Interstate 90 interchange) and Swift Avenue S on the south. Except for the 2.5-block Principal Arterial segment that connects between the east and west portions of S Columbian Way, it is designated as a Minor Arterial. The Principal Arterial segment between the ends of S Columbian Way has two vehicle travel lanes in each direction with sharrows¹⁰ for bicyclists; a southbound bike lane with in-street separation begins just south of S Nevada Street. There are sidewalks on both sides of the street. South of S Oregon Street, there is one vehicle lane and a bike lane in each direction with parking on both sides of the street. Farther south, there is a bike lane for northbound travel and a sharrow for southbound travel approaching S Snoqualmie Street. Near the site, there is a 20-mph school zone when children are present.

⁹ Seattle Department of Transportation (SDOT), Interactive Street Classification Maps, accessed August 2021.

¹⁰ A "sharrow" is a shared-lane pavement marking that is placed in the roadway lane to highlight the shared space; however, unlike a bicycle lane it does not delineate a particular part of the roadway that a bicyclist should use.





16th Avenue S is a north-south local access street just west of the school site. There is sidewalk and intermittent segments with curb or wheel-stops placed as curb on the east side of the street. A recessed-curb pullout area along the site's 16th Avenue S frontage is designated as the school-bus load/unload area (signed for school buses only from 7:00 A.M. to 10:00 A.M. and 1:00 P.M. to 6:00 P.M.). That area is used as perpendicular on-street parking during other times. There is also a small (4 space) automobile school load area painted along 16th Avenue S adjacent to the site north of the school-bus load zone (signed for school-load only from 7:00 A.M. to 6:00 P.M.). Near the school, there is a 20-mph school zone enforced when children are present.

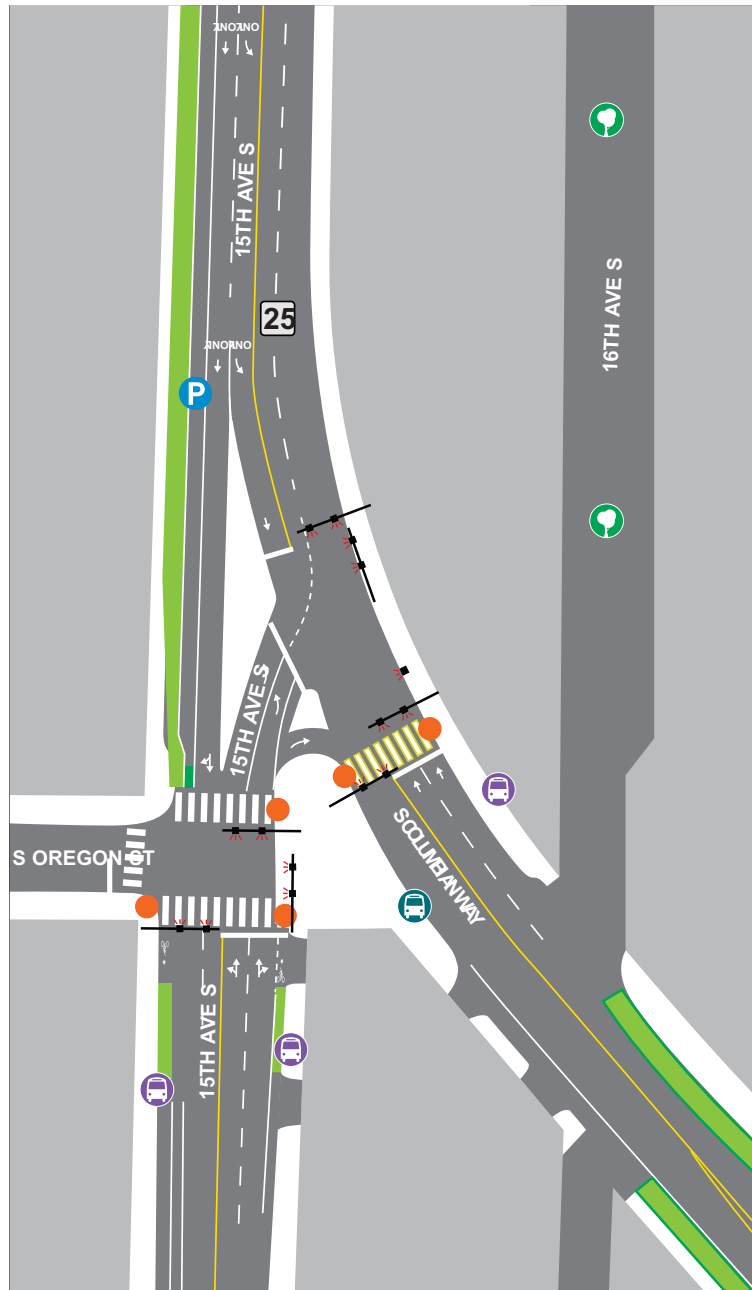
S Dakota Street is an east-west local access street north of the site. It provides local access to Jefferson Park and residents living along 16th Avenue S. Its intersection with 15th Avenue S is signalized, and there are marked crosswalks in all four directions.

S Oregon Street is an east-west local access street. Its intersection with 15th Avenue S is signalized, and has recently been reconstructed as described below. It has curbs, gutters, sidewalks, and parking on both sides of the street.












S Nevada Street is an east-west local access street that intersects with 15th Avenue S northwest of the school site. It provides access for residents, the school and parts of Jefferson Park. It has curbs, gutters, sidewalks, and parking on both sides of the street.

In 2022, the SDOT reconfigured the intersection at 15th Avenue S / S Columbian Way / S Oregon Street. The changes eliminated the direct connection of S Oregon Street to S Columbian Way, upgraded pedestrian push buttons and curb ramps to meet Americans with Disabilities Act (ADA) standards, improved and updated sidewalks, created a pedestrian peninsula, installed new curb bulbs, and improved connections for bicycles. Figure 3 shows the improvements.





INTERSECTION IMPROVEMENT MAP KEY:

-  Curb ramp
-  Bike box (bike protection at intersection)
-  Existing bike lane to become a protected bike lane
-  Existing protected bike lane
-  Existing bus stop
-  New bus stop
-  Parking to be maintained
-  25 mile per hour speed limit
-  Neighborhood Greenway
-  Leading pedestrian interval (gives pedestrians more time to cross before vehicle traffic signals change)
-  Signal

Source: SDOT, <https://www.seattle.gov/transportation/projects-and-programs/programs/maintenance-and-paving/current-paving-projects/15th-ave-s-improvements>, accessed, July 2021.

2.1.2. Planned Improvements

The following plans and programs were reviewed to determine if any planned transportation improvements could affect the roadways and intersections near Mercer Middle School by 2025 when the replacement project is planned to be complete and occupied.

City of Seattle's 2021-2026 Adopted Capital Improvement Program (CIP)¹¹ – No specific improvements to the transportation network were identified in the site vicinity.

City of Seattle's 2022-2027 Proposed Capital Improvement Program (CIP)¹² – No specific improvements to the transportation network were identified in the site vicinity.

Adopted Seattle Bicycle Master Plan (BMP)¹³ – The plan includes a number of improvements to both the City-wide and local bicycle facility infrastructure around the Mercer Middle School site, including protected bicycle lanes, local connectors, and neighborhood greenways. The *Seattle Bicycle Master Plan – 2019-2024 Implementation Plan*¹⁴, which lists projects completed, funded, and or removed, also defines the priorities of the projects. It notes that some projects, such as the S Columbian Way / S Alaska Street bike lane, have already been completed or partially completed. Some have been modified or removed from the plan, such as the 16th Avenue S Greenway, due to infeasibility resulting from constraints at 15th Avenue S and S Columbian Way. The implementation plan does not identify any additional projects for implementation in the site vicinity by 2024. However, SDOT staff indicated that, although the Beacon Avenue Protected Bike Lane (PBL) project does not currently have full funding or an implementation schedule, it should be included as part of future analyses after 2023.¹⁵

Seattle's Neighborhood Greenway Network¹⁶ – Neighborhood greenway information provided by SDOT indicates no additional greenways currently in design or planning stages in the site vicinity.

Levy to Move Seattle – Workplan Report¹⁷ – This document outlines SDOT's workplan to deliver citywide transportation projects and services funded in part or in full by the *Levy to Move Seattle* (approved by voters in 2015). The nine-year workplan (2016-2024) documents achievements and challenges and sets the agency's plan for future years. The *2021 Levy Delivery Plan*, published February 2021, listed the intersection at 15th Avenue S and S Columbian Way as a Vision Zero Corridor; the improvements were completed in 2021.

Your Voice, Your Choice¹⁸ – SDOT's participatory budgeting initiative, in which Seattle residents decide how to spend a portion of the City's budget on small-scale park and street improvements, was paused for 2021.

¹¹ City of Seattle, 2021.

¹² City of Seattle, 2021.

¹³ City of Seattle, March 2015.

¹⁴ SDOT, June 13, 2019.

¹⁵ Email communication, J. Marek, SDOT, January 21, 2021.

¹⁶ <https://www.seattle.gov/transportation/projects-and-programs/programs/greenways-program>, Map updated January 24, 2020, Accessed July 2021.

¹⁷ SDOT, November 2018.

¹⁸ City of Seattle, Your Voice, Your Choice, <https://www.seattle.gov/transportation/projects-and-programs/programs/pedestrian-program/yvyc-program>, accessed October 2020.



2.2. Traffic Volumes

2.2.1. Existing Traffic Volumes

For the 2021-22 school year, SPS returned to in-person learning at all levels after more than a year of remote learning due the COVID-19 pandemic. At the time of these analysis, the ongoing effects of the pandemic continued to influence traffic and transportation as large numbers of employees continued to work from home. Therefore, these analyses were prepared using a combination of baseline traffic data collected in the vicinity in September 2019 (prior to COVID-19) and new data collected in November 2021. As noted previously, the school day at Mercer Middle School is from 8:55 A.M. to 3:45 P.M. To capture the existing traffic conditions during the current arrival and dismissal peak periods, traffic counts were performed from 7:30 to 9:30 A.M. and from 2:30 to 4:30 P.M. on Tuesday, November 16, 2021 at each of the study intersections. Table 1 lists the study-area traffic data compiled and used for this analysis to evaluate morning and afternoon peak hour conditions.

Table 1. Traffic Count Data

Count Locations	Day(s), Date(s)	Count Periods	Counted By
S Oregon Street / 15 th Avenue S	Thu., Sep. 26, 2019 Tue., Nov. 16, 2021	7-9 A.M.; 11 A.M. -1 P.M.; 4-6 P.M. 7:30 – 9:30 A.M.; 2:30 – 4:30 P.M.	Idax Data Solutions
S Columbian Way / 15 th Avenue S	Thu., Sep. 26, 2019 Tue., Nov. 16, 2021	7-9 A.M.; 11 A.M. -1 P.M.; 4-6 P.M. 7:30 – 9:30 A.M.; 2:30 – 4:30 P.M.	Idax Data Solutions
S Dakota Street / 15 th Avenue S	Thu., Sep. 26, 2019 Tue., Nov. 16, 2021	7-9 A.M.; 11 A.M. -1 P.M.; 4-6 P.M. 7:30 – 9:30 A.M.; 2:30 – 4:30 P.M.	Idax Data Solutions
S Columbian Way / 16 th Avenue S	Tue., Nov. 16, 2021	7:30 – 9:30 A.M.; 2:30 – 4:30 P.M.	Idax Data Solutions
S Columbian Wy / Veteran Hospital Dr	Tue., Nov. 16, 2021	7:30 – 9:30 A.M.; 2:30 – 4:30 P.M.	Idax Data Solutions
S Columbian Wy / Mercer MS Main Dwy	Tue., Nov. 16, 2021	7:30 – 9:30 A.M.; 2:30 – 4:30 P.M.	Idax Data Solutions
S Columbian Wy / Mercer MS Staff Dwy	Tue., Nov. 16, 2021	7:30 – 9:30 A.M.; 2:30 – 4:30 P.M.	Idax Data Solutions

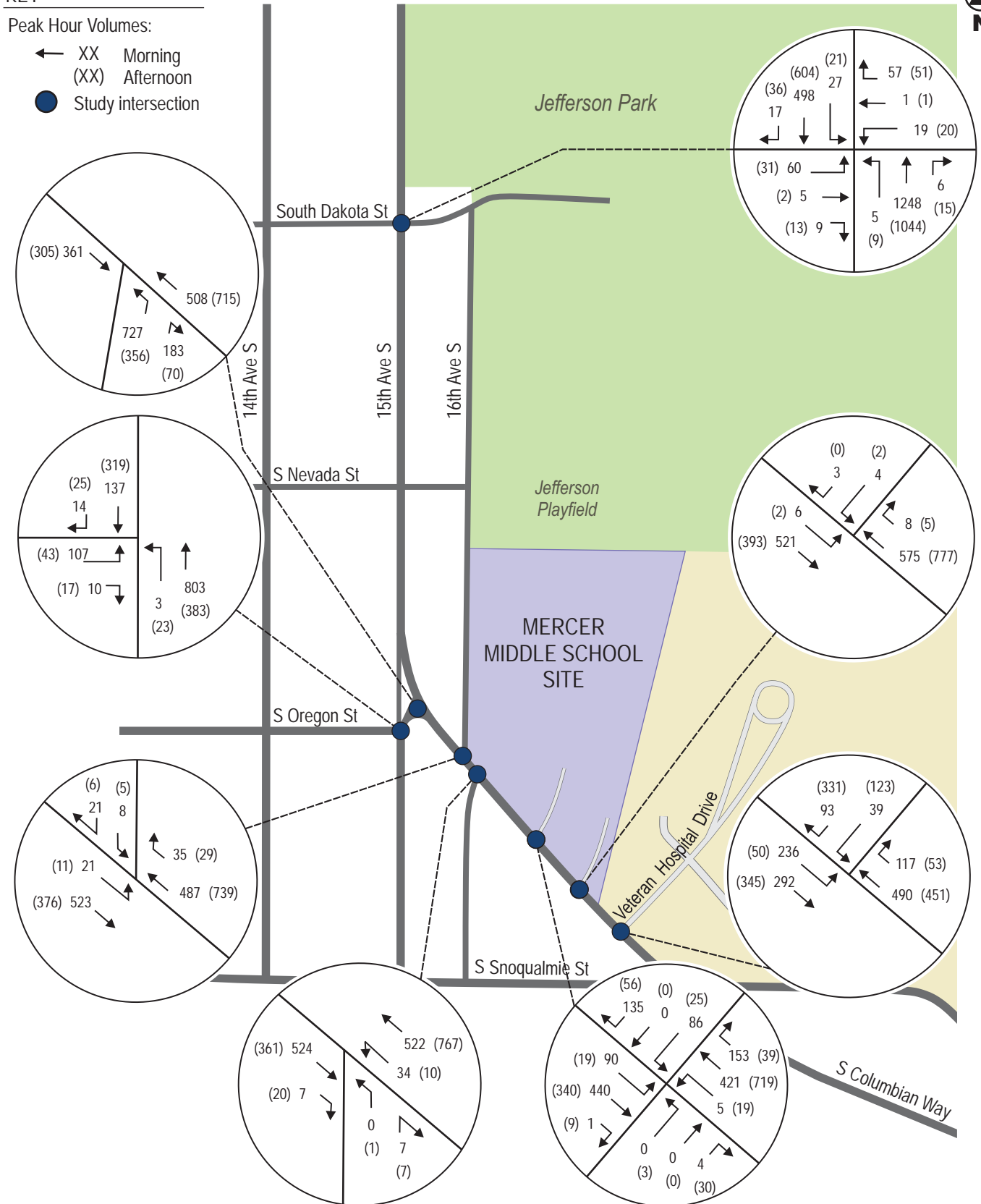
The counts indicated that the morning and afternoon peak hours for school traffic occurred from 8:00 to 9:00 A.M. and from 3:15 to 4:15 P.M., respectively. Based on information from SPS staff and the project design team, the volumes of automobile trips by family drivers for student drop-off and pick-up has been noticeably higher in fall 2021 compared to past years due to the ongoing cascading effects of the pandemic, including school-bus driver shortages. However, a comparison of AM peak hour traffic count data from 2019 and 2021 indicated that background (non-school) traffic was about 30% lower during the 2021 counts. This likely reflects ongoing patterns of many employees working from home due to the pandemic. Based on these results and consistent with industry guidance and practice, all volumes were compiled, adjusted (using a 0.5% compound annual growth rate), and balanced upward to reflect normalized (non-COVID) peak hour traffic volumes for 2021. Figure 4 shows the existing (2021) normalized traffic volumes for the morning and afternoon peak hours.



KEY

Peak Hour Volumes:

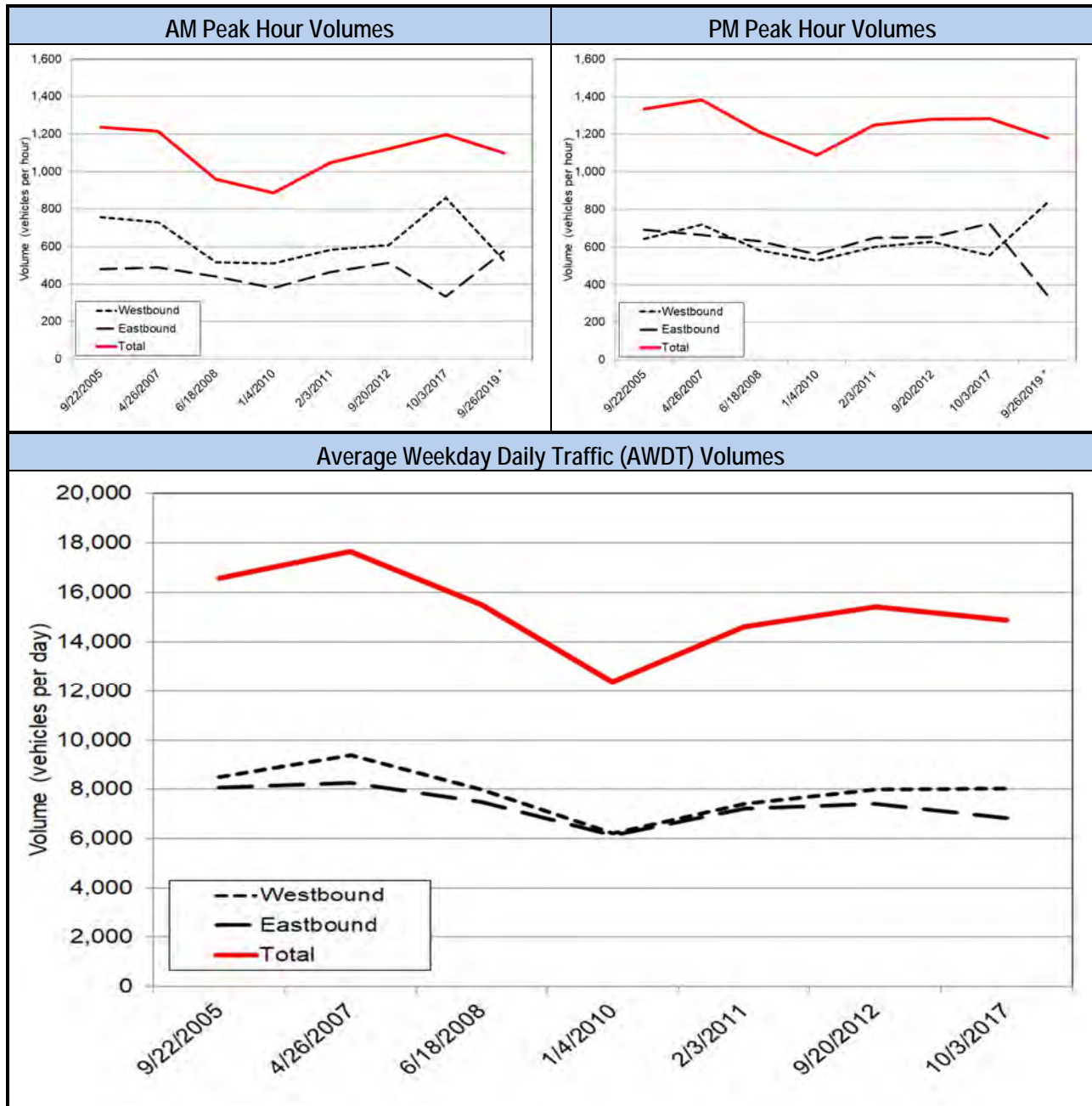
- ← XX Morning
(XX) Afternoon
- Study intersection



2.2.2. Historical Traffic Volumes

The City of Seattle Department of Transportation (SDOT) performed traffic counts on S Columbian Way near Beacon Avenue S several times between 2005 and 2017. These counts were compiled to show how morning peak hour, PM peak hour, and daily traffic volumes in the study area have changed over that period. Morning and afternoon counts conducted at 15th Avenue S in September 2019 were also included for comparison. Figure 5 shows the AM peak, PM peak, and weekday daily volumes. As shown, these counts indicate small declines (about 0.3% per year) during the AM and PM peak hours as well as a larger decline in daily volume (about 0.9% per year).

Figure 5. Traffic Volumes on S Columbian Way – September 2005 thru October 2017



Source: Count data on S Columbian Way near Beacon Avenue S, SDOT, Traffic Count Database, 2021.

* Data from peak period turning movement counts by SDOT, September 26, 2019.

2.2.3. Forecast Without-Project Traffic Volumes

The replacement school is planned to be occupied by fall 2025. Although the historical count data described and presented previously indicate declining daily and peak hour traffic volumes in the area, to account for recent and ongoing development throughout Seattle and within the site vicinity, a 0.5% annual growth rate was applied to the normalized 2021 volumes to estimate 2025-without-project volumes at all study-area intersections. This is consistent with rates used for traffic analyses of other developments in the site vicinity, including for SPS projects near the site, and likely results in conservatively-high estimates of future traffic volumes.

Additionally, the Seattle Department of Construction and Inspections' (SCDI) Property and Building Activity permit map was reviewed to determine if any large future development projects are planned that could potentially generate additional traffic in the project study area. Based on that review, one project was identified at 3951–15th Avenue S (SCDI #3037013-LU). It would construct a four-story apartment building with 18 units and seven parking stalls. The City's land use decision for the project included estimates of traffic generation from the site (about 4 AM peak hour trips and about 5 PM peak hour trips). There are a number of smaller pipeline development projects (ranging from two to eight residential units) within the vicinity. However, those are expected to have negligible impacts to traffic and parking within the study area during the identified peak hours, were not required by the City to prepare traffic analyses, and would be accounted for by the compound annual growth rate. Figure 6 shows the forecast 2025-without-project morning and afternoon peak hour traffic volumes.

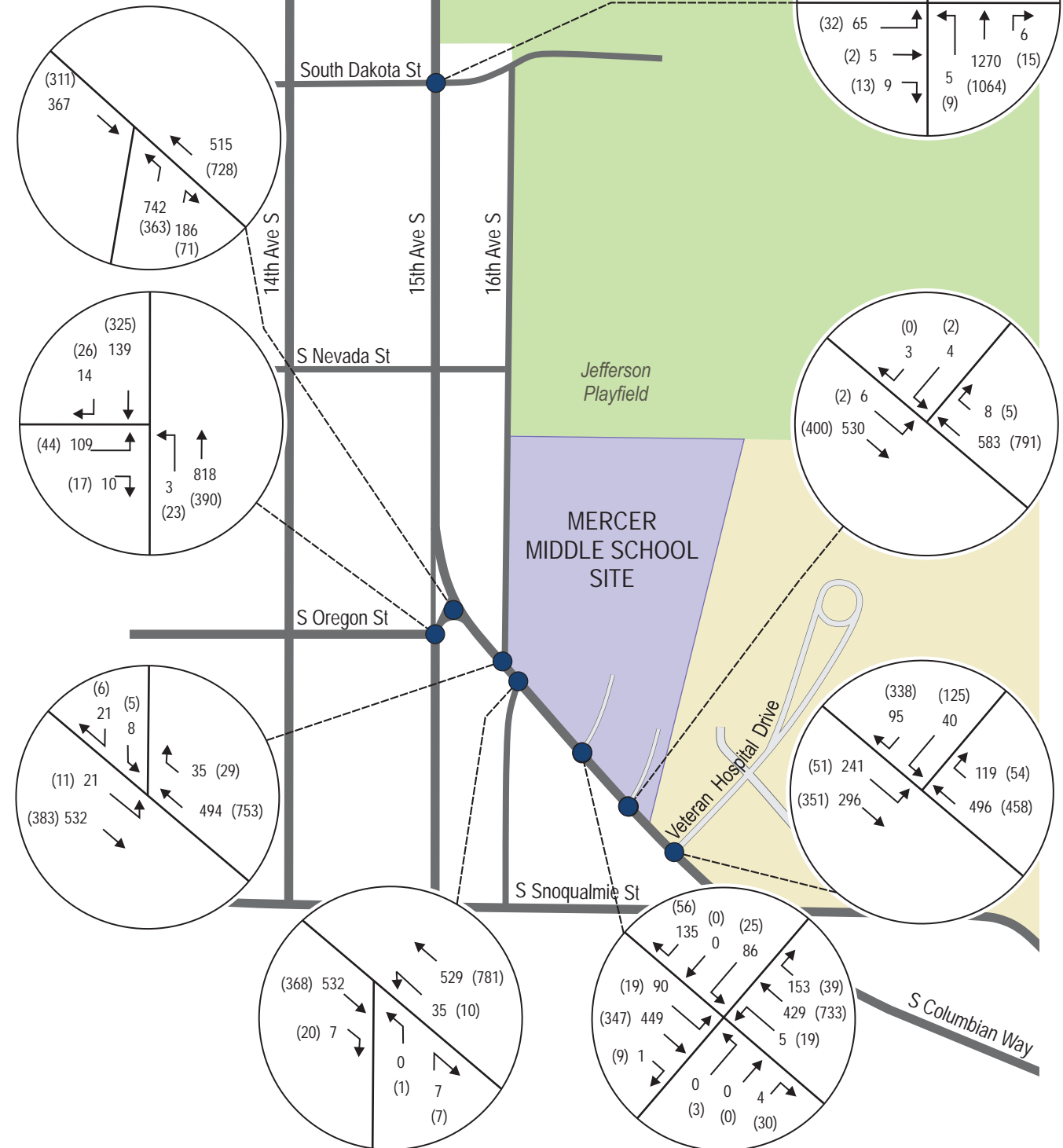
Typically, without-project traffic volumes would be adjusted to reflect the current capacity of Mercer Middle School (up to 1,296 students when including the 25 portables on the site). However, to present a conservative worst-case analysis, the existing year 2021-22 enrollment level (986 students) was assumed to remain as part of the 2025-without-project condition.



KEY

Peak Hour Volumes:

- ← XX Morning
(XX) Afternoon
- Study intersection



2.3. Traffic Operations

Level of service (LOS) is a qualitative measure used to characterize traffic operating conditions. Six letter designations, “A” through “F,” are used to define level of service. LOS A is the best and represents good traffic operations with little or no delay to motorists. LOS F is the worst and indicates poor traffic operations with long delays. The City of Seattle does not have adopted intersection level of service standards; however, project-related intersection delay that causes a signalized intersection to operate at LOS E or F, or increases delay at a signalized intersection that is projected to operate at LOS E or F without the project, may be considered a significant adverse impact, if increases are greater than 5 seconds. The City may tolerate LOS E or F conditions for automobiles at signalized intersections where physical constraints limit opportunities for widening or where it has established priority for other modes such as transit, pedestrian, or bicycle movements. The City may also tolerate delays in the LOS E or F range at unsignalized intersections where changes such as conversion to all-way-stop-control or signalization are not applicable or desirable.

Levels of service for the study area intersections were determined based on methodologies established in the *Highway Capacity Manual (HCM)*, 6th Edition¹⁹ using the *Synchro 10.3* analysis software. Appendix A summarizes level of service thresholds and definitions for signalized and unsignalized intersections.

The modeling assumptions for existing conditions, including signal timing, phase splits, and channelization for study-area intersections were provided by SDOT²⁰ and field verified. The modeling assumptions for 2025-without-project conditions reflect SDOT’s new policy for signal timing, which codifies support for mobility while minimizing delay to pedestrians.²¹ The models also include implementation of Leading Pedestrian Intervals (LPIs).

Table 2 summarizes existing and forecast 2025-without-project levels of service at the study-area intersections for morning and afternoon peak hours. As shown, the four signalized intersections currently operate at LOS D or better during both peak hours. The four unsignalized intersections currently operate at LOS A overall (with all movements at LOS E or better). Assumed traffic increases due to background growth are projected to add small amounts of delay; however, signal timing improvements that are still being implemented by SDOT as part of the 15th Avenue S / S Columbian Way / S Oregon Street reconfiguration are expected to reduce delays and improve operations for the forecast 2025 conditions during the afternoon peak hour.

All unsignalized study-area intersections are forecast to remain operating at LOS A overall. However, assumed growth in background traffic along S Columbian Way is forecast to result in added delay (just over 9 seconds) and degrade the southbound turns from the school’s main access to LOS F in the afternoon peak hour.

¹⁹ Transportation Research Board 2016.

²⁰ M. Dunlap, SDOT, December 2021.

²¹ SDOT, *Policy for Traffic Signal Cycle Time, and Pedestrian Signal Timing and Actuation*, January 27, 2021. The new policy sets maximum signal cycle lengths by corridor type and Comprehensive Plan designation, reduces walk speed calculations, and establishes criteria for pedestrian recall phases. The modeling was also adjusted to add Leading Pedestrian Intervals (LPIs) as directed by SDOT staff.



Table 2. Level of Service Summary – Existing and 2025-Without-Project Conditions

Intersections	Morning Peak Hour (8:00-9:00 A.M.)				Afternoon Peak Hour (3:15-4:15 P.M.)			
	Existing		2025 w/o Project		Existing		2025 w/o Project	
	LOS ¹	Delay ²	LOS	Delay	LOS	Delay	LOS	Delay
Signalized								
S Columbian Way / 15 th Ave S	B	14.3	B	14.3	B	13.3	A	8.7
S Oregon St / 15 th Ave S	B	17.5	B	19.6	D	45.2	C	29.6
S Dakota St / 15 th Ave S	A	8.1	A	8.3	A	6.1	A	6.2
S Columbian Way / Veteran Hospital Dr	B	17.6	D	38.0	C	21.4	C	29.8
Two-Way-Stop Controlled	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S Columbian Wy / 16 th Ave S (N) (overall)	A	0.9	A	1.1	A	1.1	A	1.1
Eastbound Left-Turn	A	9.8	A	9.8	B	12.3	B	13.3
Southbound Turns	B	14.4	C	20.1	E	43.2	E	44.8
S Columbian Wy / 16 th Ave S (S) (overall)	A	0.4	A	0.4	A	0.2	A	0.2
Westbound Left-Turn	A	9.5	A	9.5	A	8.5	A	8.5
Northbound Turns	B	11.7	B	11.9	B	12.7	B	14.5
S Columbian Wy / Main Access (overall)	A	9.6	A	9.6	A	7.2	A	8.3
Northbound Approach	B	10.2	B	10.2	C	15.3	C	15.8
Eastbound Left Turn	A	9.5	A	9.6	B	11.6	B	11.7
Westbound Left Turn	A	8.5	A	8.5	A	8.2	A	8.2
Southbound Approach	E	43.5	E	44.5	E	46.9	F	56.2
S Columbian Wy / Staff Access (overall)	A	0.3	A	0.3	A	0.2	A	0.1
Eastbound Left-Turn	A	9.7	A	9.7	B	12.3	B	12.7
Southbound Turns	C	17.1	C	15.1	E	43.3	D	30.0

Source: Heffron Transportation, Inc., February 2022.

1. Level of service.
2. Average seconds of delay per vehicle.

2.4. Parking Supply and Occupancy

On-street parking at and around the Mercer Middle School site was surveyed to determine the existing parking supply and parking occupancy. The results of those surveys were used to estimate how parking occupancy could be affected by the school replacement project (which is presented later in Section 3.5). The following sections describe the parking supply as well as the current parking occupancy and utilization rates.

2.4.1. Methodology and Study Area

Detailed on-street parking studies were performed and supply was documented according to the methodology outlined in the City's Tip #117. Although Tip #117 was created for another purpose, it outlines the City's preferred methodology to determine the number and type of on-street parking spaces that may exist within a defined study area, and how much of that supply is currently utilized at different times of the day.

The study area for the on-street parking analysis included all roadways within an 800-foot *walking* distance from the school site, as is typically required by the City of Seattle. The 800-foot walking distance



results in a study area that extends just east of 13th Avenue S to the west, S Dakota Street to the north, just west of the S Angeline Street / S Columbian Way intersection to the southeast, and just north of S Angeline Street to the south. Much of the study area is comprised of single-family residential units, many of which have garages and driveways and/or off-street parking accessed via alleys. Some of the study area consists of neighborhood commercial uses, Jefferson Park, and institutional land uses (including schools churches, and the VA Hospital). Details about parking supply and occupancy are provided in the following sections.

The study area was separated into individual block faces. A block face consists of one side of a street between two cross-streets. For example, the north side of S Oregon Street, between 14th Avenue S and 15th Avenue S is one block face (identified as block face ‘AW’ for this study). Figure 7 shows the study area and block face designations.

2.4.2. Existing On-Street Parking Supply

Each block face was measured and analyzed to determine the number of on-street parking spaces. First, common street features—such as driveways, fire hydrants, and special parking zones—were noted. No on-street parking capacity was assumed within 30 feet of a signalized or marked intersection, within 20 feet of an uncontrolled intersection, within 15 feet on either side of a fire hydrant, or within 5 feet on either side of a driveway or alley. The remaining unobstructed lengths between street features were converted to legal on-street parking spaces using values in the City’s Tip #117. Based on extensive past experience of Heffron Transportation preparing on-street parking utilization studies, a trend has been observed that the increased popularity of smaller cars and the tendency for drivers to park closer together in areas with higher utilization can result in more available supply than would be suggested by the Tip #117 guidance. Detailed parking supply by block face is provided in Appendix B.

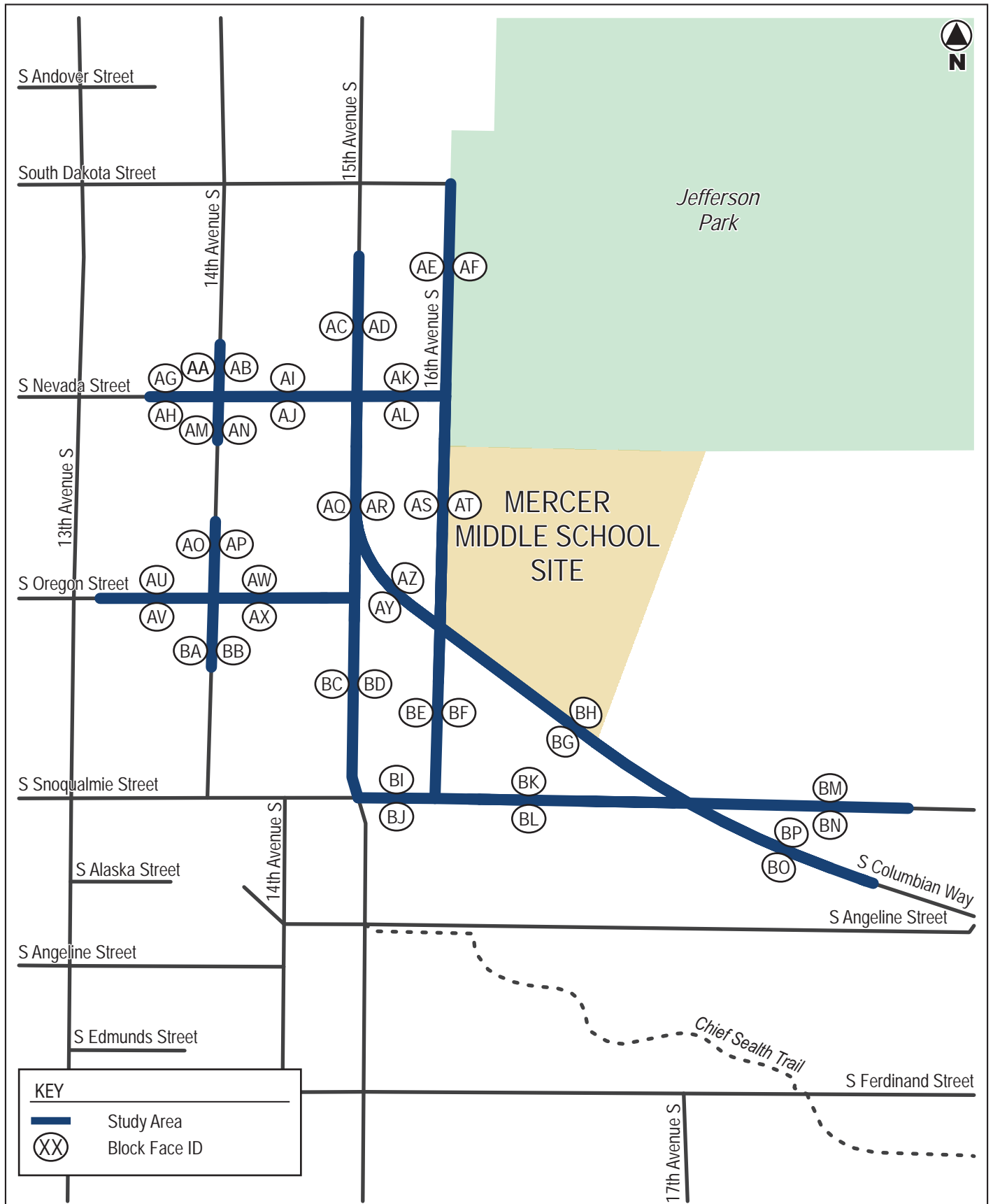
The parking supply survey determined that there are 275 on-street parking spaces within the existing study area and 213 have no signed restrictions. After accounting for school bus and school load zone restrictions along 16th Avenue S (totaling 39 spaces), and workday parking restrictions along S Snoqualmie Street (3 spaces). The study-area on-street parking supply totals 233 spaces in the morning, 268 spaces in the mid-morning period, and 275 spaces in the evening.

2.4.3. On-Street Parking Occupancy

At the time of this study, Seattle Public Schools had returned to in-person learning despite the lingering effects of the COVID-19 pandemic. While some employees were beginning to return to offices in the greater Seattle region, many were still working from home, which likely resulted in higher levels of resident-generated parking demand at and near homes during weekdays.

Parking occupancy counts were performed in August 2021 to reflect study area conditions at a time when school was not in session; counts were performed in November 2021 to reflect conditions with school in session. Occupancy counts were performed at three times—during early morning (between 7:00 and 7:45 A.M.) to reflect the time when staff would typically begin to arrive at the school, mid-morning between 10:30 and 11:15 A.M.) when school-day parking demand is typically highest and evening (between 7:30 and 8:15 P.M.) when some school events would typically occur. The summer counts were performed on Thursday, August 19, 2021; fall counts were performed on Tuesday, November 16 and Thursday November 18, 2021. The counts for each day were compiled and averaged.





The results of the parking occupancy surveys are summarized in Table 3. On-street parking utilization was calculated using the methodology described in Tip #117 and is the number of vehicles parked on-street divided by the number of legal on-street parking spaces within the study area or on a specific block face. The study area utilization totals are also summarized in Table 3. For the purpose of evaluating the potential on-street parking impacts associated with the new developments, the City considers utilization rates of 85% or higher to be effectively full. As shown, the survey determined that parking utilization was below this level during all time periods, including the summer counts, and ranged between 47% and 53% with school in session. Mid-morning utilization was 8% higher in the summer than in the fall, which may have been a result of higher numbers of employees still working from home during summer 2021 and/or recreational use of Jefferson Park. Detailed summaries of the on-street parking occupancy by block face for all counts are provided in Appendix B.

Table 3. Existing Study Area – On-Street Parking Demand Survey Results

	Weekdays Early-Morning (7:00-7:45 A.M.)				Weekdays Mid-Morning (10:30-11:15 A.M.)				Weekday Evenings (7:00-7:45 P.M.)			
	No School	Fall 2021: School In Session			No School	Fall 2021: School In Session			No School	Fall 2021: School In Session		
Date of Counts	8/19	11/16	11/18	Avg.	8/19	11/16	11/18	Avg.	8/19	11/16	11/18	Avg.
Demand	115	113	106	110	160	141	138	140	146	140 ^d	142 ^d	141 ^d
Supply ^a	233 ^b	233 ^b	233 ^b	233 ^b	268 ^c	268 ^c	268 ^c	268 ^b	275	275	275	275
Utilization	49%	48%	45%	47%	60%	53%	51%	52%	53%	51%	52%	51%

Source: Heffron Transportation, Inc., November 2021

a. Parking supply values include spaces along the east side of 16th Avenue S north of S Columbian Way adjacent to Mercer Middle School and Jefferson Playfield that are outside of City of Seattle right-of-way.

b. Parking supply value excludes 3 spaces signed with workday parking restrictions, 35 spaces signed for School Bus Only (7–10 A.M. and 1–6 P.M.), and 4 spaces signed for School Load Only (7 A.M.–6 P.M. except Sat/Sun/Hol).

c. Parking supply values exclude 3 spaces signed with workday parking restrictions, and 4 spaces signed for School Load Only (7 A.M.–6 P.M. except Sat/Sun/Hol).

d. Approximately 30 to 40 people were observed using the Jefferson Playfield athletic facilities, which likely affected parking occupancy along block faces 'AT' and 'AF'.

Within the study area, there were between 120 and 135 unused parking spaces on school days across the three observation time periods.

2.4.4. On-Site Parking

There are two on-site parking lots with a combined striped parking supply of 92 spaces. The main lot, with 72 spaces, is located in the southwest corner of the site and accessed from the main (western) driveway on S Columbian Way. A staff lot is located at the northeast corner of the site and is accessed from the eastern driveway on S Columbian Way. The staff lot currently has 20 spaces (including one loading dock stall), although historical aerial imagery indicates striping has evolved over the years and there is room to accommodate more than 20 vehicles. Demand in the staff lot ranged from 20 to 22 vehicles, while the main lot demand ranged from 49 to 53 vehicles. On-site parking demand in the early morning (before school) and evening was very low—ranging from 5 to 11 vehicles. It is noted that on-site parking has decreased with the decrease in enrollment. For comparison, demand counts were performed using aerial images of the school from May 2017 and May 2019,²² when the school had enrollments of 1,178 and 1,147 students, respectively.

²³ Those counts found a total of 87 and 72 vehicles parked on site.

²² Google Earth, Aerial images accessed December 2021.

²³ SPS, P223 Enrollment Reports, May 2017 and May 2019.



2.4.5. Combined School-Day Parking Demand

Since some school-related parking demand likely occurs on-street, rates that consider on-site and on-street demand were derived. Examination of the on-street parking demand results for block faces closest to the site (e.g., 16th Avenue S) indicates that the school may generate between 10 and 17 vehicles on-street midday. The combined (on- and off-site) parking demand rates for the school are estimated at 0.080- to 0.093-vehicles per-student and 0.73- to 0.85-vehicles-per-employee. The range of rates, derived specifically for Mercer Middle School are within but at the lower end of the range of rates on which ITE's *Parking Generation*²⁴ rates and equations are based.

The rates derived for Mercer Middle School account for parking demand generated by all users, including employees and visitors and reflects some use of transit and non-motorized modes of travel. Rates at this school site are likely lower than observed at other Seattle-area middle schools due to the availability and proximity of Metro transit service and stops adjacent to the site.

2.5. Traffic Safety

Collision data for the study area intersections and roadway segments were obtained from SDOT's Open Data Portal. An extended period was examined, between January 1, 2016 and the most recent records available July 20, 2021 (5.5 years). The data, summarized in Table 4, were examined to determine if there are any unusual traffic safety conditions that could impact or be impacted by the proposed project. Unsignalized intersections with five or more collisions per year and signalized intersections with 10 or more collisions per year are considered high collision locations by the City.

There were 27 collisions reported in the study area during the studied period. Of those, 7 occurred at the 15th Avenue S / S Oregon Street / S Columbian Way intersection. As noted previously, that intersection was re-constructed in 2021, and S Oregon Street no longer connects directly to S Columbian Way. The collision data mostly reflect the prior configuration. As shown, all of the study area intersections averaged fewer than two collision per year, and none met the criteria for a high-collision location for the time period evaluated. None of the reported collisions resulted in fatalities. Overall, these data do not indicate any unusual traffic safety conditions.

²⁴ ITE, 5th Edition, 2010.



Table 4. Collision Summary

Intersection	Rear-End	Side-Swipe	Left Turn	Right Angle	Ped / Cycle	Other	Total for 5.5 Years	Average/Year
15 th Avenue S / S Dakota Street	2	0	5	0	0	0	7	1.3
15 th Avenue S / S Oregon Street	2	1	0	0	0	2	5	0.9
15 th Avenue S / S Nevada Street	0	0	0	1	2	0	3	0.5
16 th Avenue S / S Columbian Way	1	0	1	0	0	0	2	0.4
S Columbian Way / S Oregon Street	1	0	0	0	1	0	2	0.4
S Columbian Way / Veteran Hospital Drive	3	0	0	0	0	0	3	0.5
Roadway Segment	Rear-End	Side-Swipe	Left Turn	Right Angle	Ped / Cycle	Other ^a	Total for 4 Years	Average/Year
16 th Avenue S, between S Nevada Street and S Columbian Way	0	0	0	0	0	0	0	0.0
S Columbian Way, between Oregon Street and Veteran Hospital Drive ^b	2	1	0	1	0	1	5	0.9

Source: City of Seattle Department of Transportation, January 1, 2016 through July 20, 2021,

<https://data-seattlecitygis.opendata.arcgis.com/datasets/collisions>, Accessed July 20, 2021.

a. 'Other' collisions included a rollover collision and one collision with insufficient information to determine type.

b. The school's parking lot and service driveways are located within this segment. Two collisions were attributed to a driveway.

2.6. Transit Facilities and Service

King County Metro Transit (Metro) provides bus service along 15th Avenue S, S Columbian Way, and Beacon Avenue S to the east. There are several Metro bus stops located adjacent to or very close to the school site. A stop serving northwest-bound Route 50 buses is located on S Columbian Way adjacent to the southeast portion of the school site. Another stop serving northwest-bound Route 50 buses is located on S Columbian Way immediately west of 16th Avenue S (about 75 feet from the southeast corner of the school site). Additional stops serving Route 50 are located less than 150 feet from the southwest corner of the school site on both sides of S Columbian Way at the 15th Avenue S intersection and less than 250 feet from the southeast corner of the site on S Columbian Way near the Veteran Hospital Drive intersection. Stops serving Routes 60 and 107 are located less than 350 feet from the southwest corner of the school site on both sides of 15th Avenue S south of S Oregon Street. Table 5 summarizes transit service provided within one-half mile of the Mercer Middle School project site.

Table 5. Existing Transit Service within One-Half Mile of the Project Site

Route	Closest Stops	Areas Served	Typical Weekday Headways ^a (minutes)
36	Beacon Ave S / VA Hospital Access Road	Downtown Seattle, Beacon Hill and Rainier Beach	8 – 10
50	Columbian Wy S at 16 th Ave S and Veteran Hospital Dr	West Seattle, SODO and Rainier Valley	20 – 30
60	15 th Ave S / Columbian Wy S	Capitol Hill, Beacon Hill, Georgetown, and White Center	10 – 20
107	15 th Ave S / Columbian Wy S	Beacon Hill Station, Georgetown, Rainier Beach Station, Lakeridge, Renton Transit Center	15 – 32

Sources: Sound Transit and King County Metro Transit online schedules and route information, March 2021.

a. Headway is the time between consecutive trains or buses by direction.



School bus and/or Metro transportation would continue to be available to eligible Mercer Middle School students. As outlined in the current *Transportation Service Standards*:²⁵

Middle school students who live within the boundaries of the Seattle School District and who live more than 2 miles from their assigned school are eligible for transportation. District arranged transportation is provided for those students attending a middle school in their attendance area or linked service area. ORCA cards may be provided for students attending a school outside of their service area or linked service area if they live farther than 2 miles from the school.

Specialized transportation is provided in the following circumstances

- a. Students who require specialized transportation services as determined by their IEP.*
- b. Students requiring medical transportation as approved by District Health Services.*

In August 2021, the City implemented its *Orca Opportunity Youth Program*, which made all Seattle Public middle school students, regardless of income, eligible for fully-subsidized Orca cards for the 2021-2022 academic year. At the time of this report, it was not known if this program would be extended beyond the current school year, but the City and SPS are examining that potential.

2.7. Non-Motorized Facilities

Sidewalks exist on both sides of 15th Avenue S, S Columbian Way, and the east side of 16th Avenue S along the school frontage. Sidewalks are intermittent on other local access streets in the vicinity. The signalized 15th Avenue S intersections at S Dakota and S Oregon Streets as well as the S Columbian Way / Veteran Hospital Drive have crosswalks and pedestrian signals across all legs. There is a crosswalk across the S Columbian Way approach to 15th Avenue S. There is also a crosswalk with signage at the 16th Avenue S / S Dakota Street intersections (on the south leg). There is a bike lane with in-street separation in each direction along S Columbian Way; 15th Avenue S has a sharrow in the northbound direction and a bike lane with in-street separation in the southbound direction.

The November 2021 counts at the study-area intersection indicated high volumes of pedestrian activity, with more than 235 pedestrian crossings of S Columbian Way at 15th Avenue S in the morning peak period and over 195 in the afternoon peak period. Based on observations, many of these pedestrians were students who were alighting from or boarding Metro buses that stop near the intersection. Some pedestrian activity was also observed crossing S Columbian Way at 16th Avenue S—20 in the morning and 2 in the afternoon. There were also high volumes of pedestrians across the 16th Avenue S approach north of S Columbian Way—250 in the morning and 325 in the afternoon peak periods.

Although signed for permit parking only, some family drivers used the parking lot owned by Beacon Hill Presbyterian Church (across S Columbian Way from the school) to drop off students in the morning or wait to pick up students in the afternoon. As a result, there were also mid-block pedestrian crossings from this lot to the main entrance of the school. Three crossed there in the morning and 74 crossed there in the afternoon. The count data indicated relatively low bicycle volumes along S Columbian Way—13 westbound, 2 eastbound in the two-hour morning peak period and 1 westbound and 5 eastbound in the afternoon two-hour peak period. It is noted that those counts were conducted in November when weather on the count day was mostly dry and temperatures were slightly below average. School staff²⁶ indicated that pre-pandemic bicycle usage at the school site was relatively low, with about 50 students and 10 staff with bikes on campus on a regular basis.

²⁵ SPS, *Revised Transportation Service Standards 2020-21: Ridership Eligibility*, Effective Sept. 1, 2020.

²⁶ SOJ citing discussions with school principal, January 2022.



The City of Seattle’s currently adopted and proposed *CIPs* were reviewed to determine if any pedestrian facility improvements are planned in the area. As described previously *Section 2.1.2*, the *CIPs* did not include any improvements planned in the vicinity, other than those recently completed at the 15th Avenue S / S Columbian Way / S Oregon Street intersection. The *Safe Routes to School 5-Year Action Plan for Seattle*²⁷ included recommended school-zone speed cameras on S Columbian Way near Mercer Middle School; those cameras were installed in 2015 and are operating.

As noted previously, the *BMP* identified planned bicycle infrastructure improvements and the recommended network. The plan includes a number of improvements to both the City-wide and local bicycle facility infrastructure around the Mercer Middle School site, including protected bicycle lanes, local connectors, and neighborhood greenways. The *Seattle Bicycle Master Plan – 2019-2024 Implementation Plan* notes that some projects, such as the S Columbian Way / S Alaska Street bike lane, have already been completed or partially completed. Some have been modified or removed from the plan due to infeasibility. The implementation plan does not identify any additional projects for implementation in the site vicinity by 2024.

²⁷ Seattle Department of Transportation; *Safe Streets, Healthy Schools and Communities*; Fall 2015.



3. PROJECT IMPACTS

This section describes the conditions that would exist with the Mercer Middle School Replacement project and the school operating at its planned capacity of up to 1,000 school students. Adjustments to the forecast 2025-without-project conditions were made to account for changes in school traffic generation and site access patterns to reflect 2025-with-project conditions. Level of service analyses were performed to determine the proposed project's impact on traffic operations in the study area. Parking demand and the potential change to on-street parking utilization was also estimated.

3.1. Transportation Network

Based on extensive coordination with SDOT, the project would make several improvements and changes to access and roadway frontages. Those changes are shown on Figure 1 and are listed and described below.

- **Staff and visitor parking** would be consolidated to one new lot and accessed from one driveway on S Columbian Way. The new access is expected to be restricted to right-in/right-out only with new C-curb installed in the center of S Columbian Way.
- **School-bus load/unload** would occur on-site within the on-site staff/visitor parking lot. Buses would share the staff/visitor parking driveway on S Columbian Way that would be restricted to right-in/right-out only movements.
- **Passenger-vehicle load/unload** would occur in a new on-site facility constructed on the west side of the site with one-way entry at the south and exit at the north.
- **16th Avenue S** frontage would be reconstructed with new curb, gutter, sidewalk, and parallel on-street parking as required by SDOT through the Street Improvement Permit (SIP) process. This curb-side parking is anticipated to be signed for school load/unload during peak arrival and dismissal periods on school days, but be available for parking during other times.
- **Fire and service/delivery access** would extend from the main parking lot around the east side of the buildings and from 16th Avenue S along the north edge of the site.
- **S Columbian Way / 16th Avenue S** intersection would be slightly reconfigured to create a 90-degree approach to S Columbian Way with curb-bulbs to minimize pedestrian crossing distances. Turns to and from S Columbian Way at 16th Avenue S would be restricted to right-only with the installation of C-curb in the center of S Columbian Way.
- **S Columbian Way** frontage segments would also be improved as required by SDOT through the SIP process. As part of those improvements, the project would relocate and reconstruct the Metro transit stop currently located at the southeast corner of the site. The new stop would be moved northwest of the existing stop and would allow for in-lane bus stops with a raised boarding platform, bike lane, curb and sidewalk, and bus shelter. The improvement is expected to include new C-curb within the center of S Columbian Way to prevent drivers from using the center turn lane to drive around stopped Metro buses.

3.2. Traffic Volumes

The proposed project would result in changes to vehicular, pedestrian, and bicycle access patterns on the surrounding transportation network. With the replacement, the school is expected to have capacity of up to 1,000 students, which is less than its existing capacity and 14 more than its 2021-22 enrollment. The school is expected to generate a decrease in daily and peak hour traffic compared to conditions over the past several years when enrollment was over 1,100 students; however, it could generate a small increase compared to levels in 2021. The site reconfiguration would change how staff, family-drivers, school buses, deliveries, and those using non-motorized modes access the site. The following describes the method used to estimate changes to site-generated traffic in the area.



3.2.1. School Trip Generation

Trip generation estimates for school projects can be developed using one of two methods. For new schools, rates published in the Institute of Transportation Engineers' *Trip Generation Manual*²⁸ are typically applied. For replacements or expansions of existing schools, it is preferred to use counts of traffic at the existing school. This method works best for schools located in areas where school-related traffic can easily be isolated and identified, and traffic counts can be used to develop rates specifically for that school. For Mercer Middle School, trip generation estimates were derived from the video traffic counts performed at the driveways and along the two roadways adjacent to the school. The resulting estimates were compared to published trip generation rates.

Based on the data collected, the existing school generated an estimated 0.69 morning peak hour trips per student and 0.35 afternoon peak hour trips per student. These rates are modestly lower than the rates and equations published for Middle School / Junior High (Land Use 522) in the *Trip Generation Manual*, (0.74 trips per student in the morning peak hour and 0.36 trips per student in the afternoon peak hour); however, they are within the range of results reported by ITE. Trip generation rates for Mercer Middle School are expected to be lower than average ITE rates due to the high numbers of students who ride Metro buses in addition to those that ride yellow school buses. The observed rates from counts in November 2021 are also likely higher than normal due to the ongoing effects of the pandemic. However, since these rates were derived specifically for the existing school, they are appropriate for use in evaluating future conditions with the replacement school. They likely result in a conservatively high estimate of future school-generated traffic.

The rates derived specifically for Mercer Middle School were applied based on the proposed capacity (1,000 students). Table 6 presents the resulting trip estimates for the proposed replacement, the existing school (at its current enrollment level), and the net change in trips expected due to the project. These estimates include school bus trips, employee trips, and family-vehicle trips. As shown, the replacement school is estimated to generate 10 added trips (5 in, 5 out) in the morning peak hour and 5 added trips in the afternoon peak hour. It is noted that compared to the school's existing capacity (and recent enrollment levels), the replacement school is estimated to generate nearly 200 fewer morning trips and about 100 fewer afternoon trips.

Table 6. Mercer Middle School Addition – Trip Generation Estimates

Site Condition	Capacity	Morning Peak Hour (8:00–9:00 A.M.)			Afternoon Peak Hour (3:15–4:15 P.M.)		
		In	Out	Total	In	Out	Total
New Mercer Intl. Middle School	1,000 students ^a	359	328	687	162	184	346
Existing Mercer Intl. Middle School	986 students ^b	354	323	677	160	181	341
Net Change	14 students	5	5	10	2	3	5

Source: Heffron Transportation, Inc., December 2021.

a. Planned capacity of new school

b. SPS P223 Enrollment Report, October 2021.

²⁸ ITE, 11th Edition, September 2021.



3.2.2. Trip Distribution and Assignment

As described, the proposed building replacement project would modify access and on-site parking at the school, which would also affect the distribution of site-generated traffic. The existing configuration of the school includes two access driveways on S Columbian Way—one for the main parking lot and passenger vehicle load/unload and a second restricted to staff and maintenance parking only. The project would relocate and reconfigure on-site parking and create a new on-site school-bus load/unload facility. Family-vehicle load/unload would be relocated to a new on-site passenger-vehicle facility on the west side of the site as well as on-street along 16th Avenue S. Access on S Columbian Way would be consolidated to one driveway providing access to staff/visitor parking and the school-bus load/unload facility. New c-curb on S Columbian Way would restrict turns to and from the site and to and from 16th Avenue S to right-only. These changes are expected to change the trip patterns on the local roadway network and at key study area intersections.

Project trip distribution patterns and assignments were developed for the morning and afternoon peak hours using a combination of resources including: 1) the school's enrollment and draw areas, 2) traffic counts and directional patterns at intersections adjacent to the site, 3) population density data within the subsectors of the draw areas; 4) employment location of residents living within the enrollment draw areas from *OnTheMap*;²⁹ 5) expected future school-bus volumes; and 6) *Google Maps* predictive travel-route and travel-time mapping resource. The resulting trip patterns also reflect typical habits of some family drivers linking student drop-off and pick-up trips with trips to and from work or other destinations. Trip assignments for two school conditions—1) existing school and access configuration and 2) proposed replacement school at capacity with the new access configuration—were compared to determine the net changes in trips and travel routes expected with the project. Figure 8 shows the traffic distribution patterns and assignments of the changes in trips for the morning and afternoon.

The changes in school trips were combined with the forecast 2025-without-project traffic volumes to reflect future conditions with the replacement school. Figure 9 shows the forecast 2025-with-project volumes for the morning and afternoon peak hours.

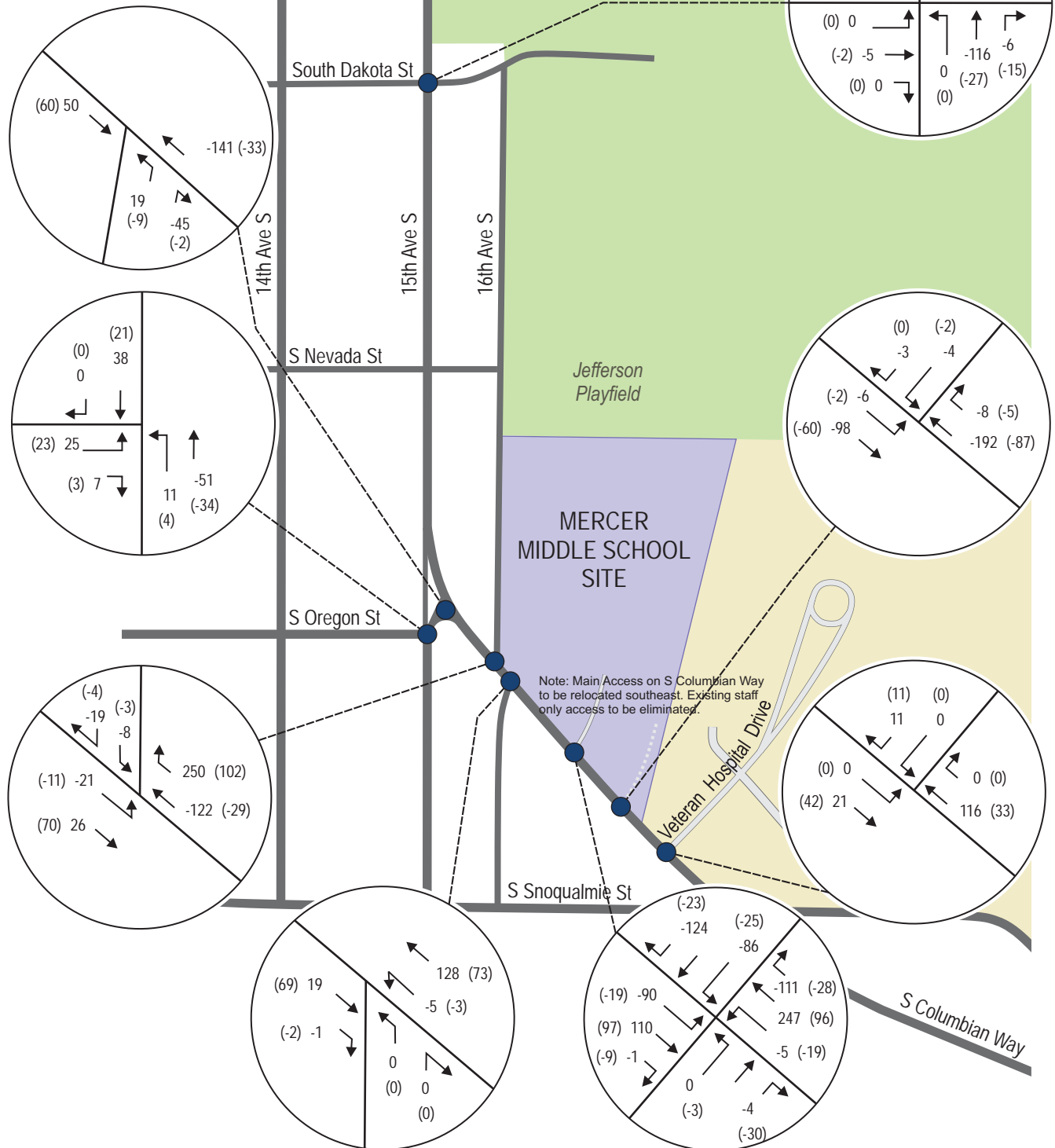
²⁹ U.S. Census Bureau. (2021). LEHD Origin-Destination Employment Statistics (2002-2019) [computer file]. Washington, DC: U.S. Census Bureau, Longitudinal-Employer Household Dynamics Program [distributor], accessed on December 8, 2021 at <https://onthemap.ces.census.gov>





KEY

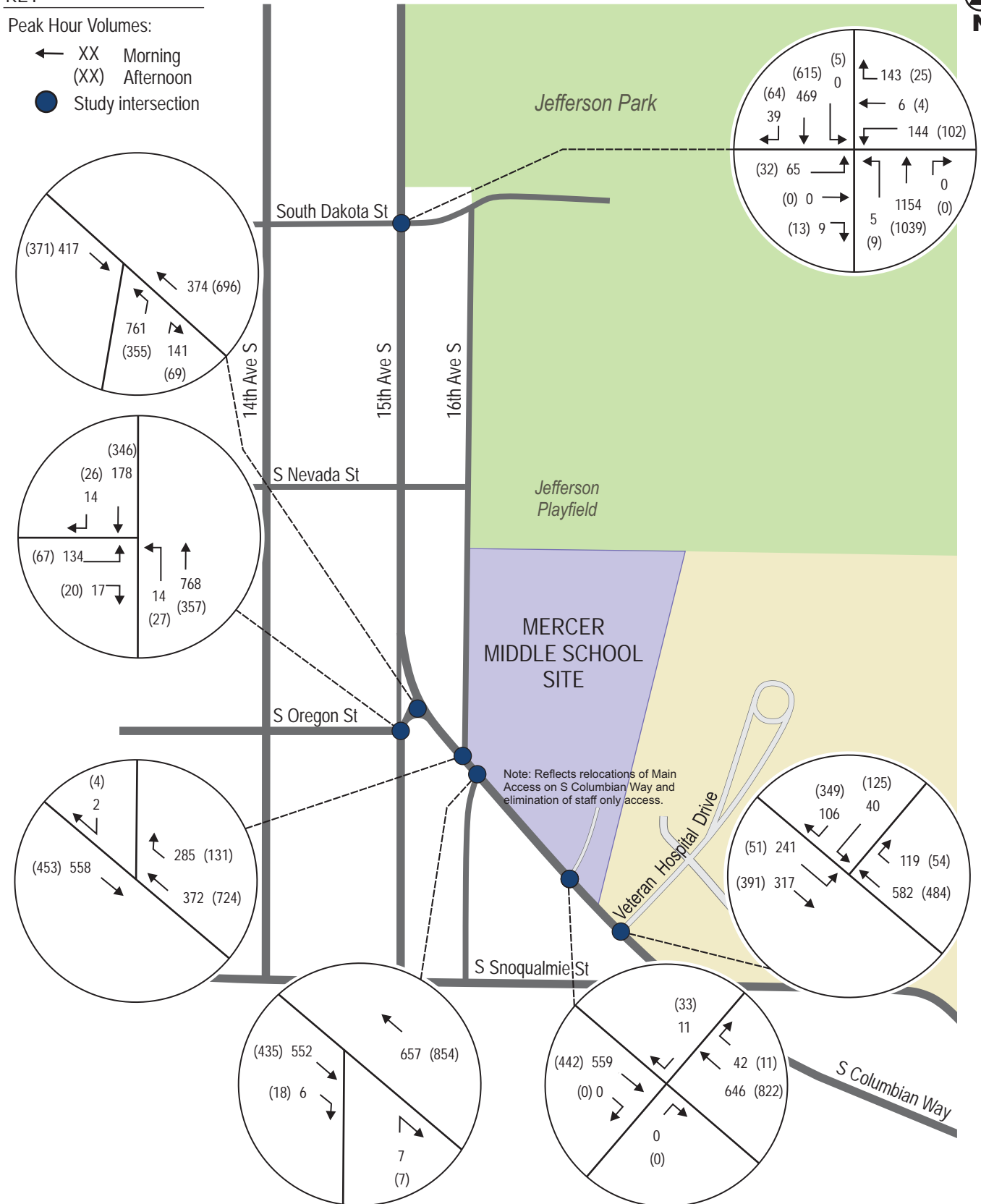
- ← XX (XX) Morning Afternoon
- Study intersection



KEY

Peak Hour Volumes:

- ← XX Morning
(XX) Afternoon
- Study intersection



3.3. Traffic Operations

Intersection levels of service for future with-project conditions were evaluated using the same methodology described previously. The operational analyses accounted for potential changes in pedestrian crossing activity, the peaking characteristics of school traffic (school drop-off and pick-up primarily occurs during about 20 minutes in the peak hours), and the potential changes to school-bus, staff, and family driver trips to and from the site. The analyses also account for changes in non-school traffic that would occur due to the new C-curb on S Columbian Way and the result turn restrictions at the school-access driveway and at 16th Avenue S.

Table 7 shows the results of the analysis; levels of service for the without-project conditions are shown for comparison.

Table 7. Level of Service Summary – Forecast 2025 Conditions Without- and With-Project

Intersections Signalized	Morning Peak Hour (8:00-9:00 A.M.)				Afternoon Peak Hour (3:15-4:15 P.M.)			
	Without Project		With Project		Without Project		With Project	
	LOS ¹	Delay ²	LOS	Delay	LOS	Delay	LOS	Delay
S Columbian Way / 15 th Ave S	B	14.3	B	14.1	A	8.7	A	8.9
S Oregon St / 15 th Ave S	B	19.6	C	20.9	C	29.6	C	31.8
S Dakota St / 15 th Ave S	A	8.3	B	16.8	A	6.2	C	27.5
S Columbian Way / Veteran Hospital Dr	D	38.0	D	54.5	C	29.8	C	33.8
Two-Way-Stop Controlled	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
S Columbian Wy / 16 th Ave S (N) (overall)	A	1.1	A	0.0	A	1.1	A	0.1
Eastbound Left-Turn	A	9.8	n/a ³	-	B	13.3	n/a ³	-
Southbound Turns	C	20.1	B	10.9	E	44.8	C	16.4
S Columbian Wy / 16 th Ave S (S) (overall)	A	0.4	A	0.1	A	0.2	A	0.1
Westbound Left-Turn	A	9.5	n/a ³	-	A	8.5	n/a ³	-
Northbound Turns	B	11.9	B	12.3	B	14.5	B	10.7
S Columbian Wy / Main Access (overall)	A	9.6	A	0.2	A	8.3	A	1.2
Northbound Approach	B	10.2	n/a ⁴	-	C	15.8	n/a ⁴	-
Eastbound Left Turn	A	9.6	n/a ³	-	B	11.7	n/a ³	-
Westbound Left Turn	A	8.5	n/a ³	-	A	8.2	n/a ³	-
Southbound Approach	E	44.5	B	13.8	F	56.2	C	21.4
S Columbian Wy / Staff Access (overall)	A	0.3	n/a ⁵	-	A	0.1	n/a ⁵	-
Eastbound Left-Turn	A	9.7	-	-	B	12.7	-	-
Southbound Turns	C	15.1	-	-	D	30.0	-	-

Source: Heffron Transportation, Inc., February 2022.

1. Level of service.
2. Average seconds of delay per vehicle.
3. n/a = not applicable; turns restricted to right-in/right-out only with project.
4. n/a/ = With relocation of Main Access, intersection no longer has south leg.
5. n/a = not applicable; driveway eliminated with project.

The table shows that traffic generated by the proposed replacement school with reconfigured access is expected to increase delays at the S Columbian Way / Veteran Hospital Drive intersection. This would primarily be a result of some school traffic being redirected due to the turn restrictions at the main site access and 16th Avenue S. Increases in delay are also forecast at the S Dakota Street / 15th Avenue S intersection, reflecting increases in volume along the primary egress route for family-vehicle traffic leaving the load/unload areas. However, all four signalized intersections are forecast to operate at LOS D or better with the project during both analysis peak hours. The unsignalized intersections are forecast to operate at LOS A overall with all movements at LOS C or better during both peak hours. Delays would be reduced for movements at S Columbian Way intersections with 16th Avenue S and the new site access due to the planned left-turn restrictions. Based on these results, the project would not result in significant adverse impacts to study-area traffic operating conditions.

As described, the project would make frontage improvements to S Columbian Way that would relocate and reconstruct the Metro transit stop currently located at the southeast corner of the site. The new facility would allow for in-lane bus stops with a raised boarding platform, bike lane, curb and sidewalk, a bus shelter, and C-curb within the center of S Columbian Way. These modifications were specifically requested by SDOT and Metro in order to provide more reliable bus service, separate bus and bicycle travel ways, and to provide a boarding and alighting area separate from the sidewalk. The bus stop would continue to be served by Metro Route 50, which operates on 30-minute headways—two buses per hour for most of the day. It is anticipated that one of the two bus trips each hour would stop during the school's peak morning arrival and afternoon dismissal periods. During the two stops each hour, it is likely that queues behind the stopped bus will extend back through the Veterans Hospital Drive intersection. However, that condition is only expected to clear within one or two of the 80-second signal cycles—affecting between 4% and 8% of the cycles each hour.

3.4. Site Access and Circulation

Family-vehicle load/unload would be relocated to the west of the site in a new on-site one-way loop (entry at the south, exit to the north). The site frontage along the east side of 16th Avenue S would be designated for school-load only during morning arrival and afternoon dismissal periods. Combined these areas would provide space for about 34 vehicles to load/unload simultaneously. The existing family-vehicle load/unload occurs from within the drive aisles of the main staff/visitor parking lot. That facility currently provide space for about 21 vehicles to load/unload and/or queue on-site. Therefore, the proposed new facilities are expected to offer more capacity than are currently accommodated.

Due to the relatively narrow width of 16th Avenue S, it is recommended that family drivers be instructed to use this street in the northbound direction when arriving to drop off or pick up students. This one-way northbound circulation pattern for school traffic was assumed in the analysis. Although not proposed as part of this project, SDOT could consider making 16th Avenue S a one-way northbound street permanently. This would require SDOT coordination with the adjacent residents and property owners. Based on the traffic counts collected for this analysis, the volume of non-school traffic using southbound 16th Avenue S (the trips that would be diverted by a one-way designation) is relatively small—typically between 2 and 10 trips per hour. However, the analysis presented in the previous section assumed these local non-school trips would continue to occur with the project.

School-bus load/unload would occur from a new on-site curb-side facility within in the staff/visitor parking lot. It would be accessed from the new right-in/right-out driveway on S Columbian Way proposed to be located about 55 feet northwest of the site's southeast corner and about 170 feet north west of the Veteran Hospital Drive intersection (measured centerline-to-centerline). Since this access is proposed for use by staff, visitors, and school buses only, with family-vehicle load/unload relocated to 16th Avenue S, it would serve relatively low volumes of peak hour trips. It is not expected to result in new significant conflicts with the Veteran Hospital Drive intersection.



SPS Transportation staff estimate that the replacement school would be served by four full-size school buses and up to seven smaller Special Education (SPED) buses and the proposed on-site school-bus load/unload loop was designed to accommodate these buses. No code departure for off-site school-bus loading would be required.

3.5. Parking Supply and Demand

3.5.1. Changes to Parking Supply

Automobile parking for 72 vehicles would be provided on site for regular school-day use; the on-site family-vehicle load/unload area could be used for parking during the school day. Both the family-vehicle and school-bus load/unload areas could be used for parking on evenings and weekends for events. In total, the site would have 97 parking spaces for event conditions (72 spaces in the main lot, 12 spaces in the automobile load/unload area, and 13 spaces in the school-bus load/unload area). The project design team anticipates that a code departure for less-than-required parking would be pursued.

As part of the frontage improvements required by SDOT along the east side of 16th Avenue S, the project would construct curb, gutter, and sidewalk. The curbside is expected to be available for parallel on-street parking that would be signed for school-load only during peak arrival and dismissal periods. This curbside reconfiguration would reduce the parking capacity along the frontage from 39 spaces (including 35 perpendicular stalls) to 21 parallel spaces. The reconfigured parking is expected to be signed for short-term school-load only during the morning arrival and afternoon dismissal periods, but would be available for visitor or other public parking during other times. No other changes are proposed that would affect the on-street parking supply.

3.5.2. Parking Demand

School Day Parking

School-day parking at middle schools is primarily influenced by staffing levels and family-volunteer activity. With the proposed replacement school operating at its planned capacity of 1,000 students, the school is expected to retain its existing number of 108 employees and its parking demand is anticipated to remain at current levels. Based on the range of rates derived from parking demand counts presented earlier in this report, the replacement school could generate demand ranging from 79 to 93 vehicles on school days. The variation in demand is expected due to fluctuations in the number of part-time staff and volunteers that may be on campus on a given day. Up to 72 vehicles could be accommodated within the staff/visitor parking lot. The remaining 7 to 21 vehicles are expected to use on-street parking near the site—most likely along 16th Avenue S. Based on these estimates, the project could result in additional on-street school-generated demand of 3 or 4 vehicles (over the current estimated level of 10 to 17). The parking occupancy results presented previously found between 120 and 135 unused spaces on school days. The small increase in overspill demand combined with the loss of parking along 16th Avenue S due to frontage improvement requirements would slightly increase utilization from 52% to 58%. However, this level is acceptable to the City and the project-related impacts would not be considered significant.

Event Parking

Mercer Middle School would continue to host events periodically throughout the school year. Many of the events have relatively modest attendance including PTSA monthly board meetings and monthly general membership meetings, parent meetings for clubs, and film screening nights. Larger events include the Winter Concert, Math Night, Science Night, Multicultural Night, Jazz, Band, and Orchestra Concerts, Talent Shows, and/or fundraising events. The largest evening events held for middle schools are typically the annual Open House (Curriculum Night) in late September. However, since the project would reduce the capacity of the school, some of the events (those influenced by the number of students enrolled)



would have reduced parking demand compared to the existing school, especially over the recent prior years. Other events, such as concerts, may not see changes in attendance or parking demand.

The on-street parking survey results indicated an average of 134 unused on-street parking spaces (out of 275 total) in the school vicinity on evenings without events at the school. With the reduction in supply expected from the 16th Avenue S frontage reconfiguration, on-street supply in the study area could be reduced to 257 spaces. Up to 77 additional spaces could be utilized before the study-area reaches 85% occupancy, which is the level at which the City considers parking to be effectively full and may examine additional parking management measures.

Observations conducted by Heffron Transportation staff at other schools have found typical larger evening events have between 3 and 3.5 attendees per parked vehicle, factoring in multiple attendees that arrive in one vehicle (e.g., students with families) and attendees that may be dropped off at an event without generating parking demand. Based on these rates, the available parking supply (97 on-site spaces, and 77 on-street spaces) would be sufficient to accommodate occasional events with between 520 and 610 people before on-street parking utilization reaches 85% occupied. However, event parking demand and on-street overspill conditions with the replacement school are expected to be the same or better than the existing school.

To minimize occasional event-related parking impacts on nearby residents, it is recommended that the District and school administration develop a Neighborhood Communication Plan for School Events expected to have attendance higher than 500 people. The communication would be intended to allow neighbors to plan for the occasional increase in on-street parking demand that would continue to occur with large events.

3.6. Traffic Safety

The collision data provided for the study area did not indicate any unusual collision patterns that would impact or be impacted by the proposed project. The project would result in several changes that are expected to improve safety conditions including:

- 1) Decrease site-generated traffic compared to the previous several years when enrollment was over 1,100 students;
- 2) Eliminate a site access driveway on S Columbian Way;
- 3) Implement turn restrictions at the main access and the 16th Avenue S intersection with S Columbian Way;
- 4) Reconfigure the north leg of the 16th Avenue S / Columbia Way S intersection to reduce the pedestrian crossing distance; and
- 5) Relocate family-vehicle load/unload to 16th Avenue S which would have a signalized egress route at the S Dakota Street / 15th Avenue S intersections.

With these changes and improvements, the project is not expected to result in adverse impacts to traffic safety within the study area.

3.7. Transit

Transit trips are expected to continue to be generated by students, teachers, and staff at the site. Although the school replacement project would reduce capacity of the school, additional students could be made eligible for Orca passes in the future. As a result, SPS would continue coordination with Metro to confirm service availability and capacity. Yellow school buses are expected to continue to serve the site; however, the number of buses is likely to be influenced by the Orca program and eligibility.



3.8. Non-Motorized Facilities

Mercer Middle School is expected to continue to generate pedestrian trips within the site vicinity. Although the capacity at the replacement school would be less than current capacity, increased Orca card eligibility for students would likely result in increases in the numbers of students walking between the site and nearby Metro transit stops. The site frontages already have sidewalks and marked crosswalks along primary school walking routes. The frontage improvements required by SDOT and incorporated into the project proposal would relocate and improve the Metro bus stop at the southeastern portion of the site and would re-align the north leg of 16th Avenue S at S Columbian Way.

On site, the project would provide the code-required bicycle parking supply with 232 bicycle parking spaces (174 long-term covered and secured spaces and 58 short-term spaces), which would be a substantial increase compared to current conditions and is expected to accommodate the level of demand for the expanded school. These changes along with the sidewalk improvements along site frontages are expected to enhance the non-motorized environment.

3.9. Short-Term Construction Impacts

Construction is planned to start in summer 2023 and end prior to fall 2025 when the replacement school is planned to be ready for occupancy. Mercer Middle School students would be temporarily relocated off-site (to the Van Asselt School) for the duration of the construction effort.

3.9.1. Construction-Period Access Operations

The construction effort would include demolition and earthwork that would consist of excavation and fill that require export of about 11,240 cubic yards (cy) of material from the site. Assuming an average of 20-cubic yards per truck (truck/trailer combination), the export could generate about 650 truckloads over the duration of the project. The initial demolition and earthwork effort would occur from July 2023 through end of September 2023 (about 65 work days). The earthwork export effort is expected to require about 25 days (about 500 cy per day).³⁰ Assuming 20 cy per truck, the export would generate about 25 truckloads per day and an average of about 3 truckloads per hour (3 trucks in and 3 trucks out) on a typical eight-hour construction work day. This volume of truck traffic would be noticeable to residents living adjacent to the site, but is not expected to result in adverse impacts to traffic operations in the site vicinity. Construction access would occur from both 16th Avenue S and S Columbian Way. Site-generated traffic during construction is expected to be much lower than conditions with the school operating normally and students on campus.

The construction of the project would also generate employee, equipment, and material delivery trips to and from the site. It is anticipated that construction workers would arrive at the construction site before the AM peak traffic period on local area streets and depart the site prior to the PM peak period; construction work shifts for schools are usually from 7:00 A.M. to 3:30 P.M., with workers arriving between 6:30 and 6:45 A.M., but not starting work until 7:00 A.M. The number of workers at the project site at any one time would vary depending upon the construction element being implemented. Parking for construction personnel is expected to occur on-site and along 16th Avenue S adjacent to the site.

³⁰ Email communication, B. Gormley, Cornerstone General Contractors, March 5, 2022.



4. SUMMARY AND RECOMMENDATIONS

The following sections summarize the findings and recommendations of the analysis.

4.1. Short-Term Conditions – Construction

- Construction is planned to begin in summer 2023 with occupancy of the replacement school in fall 2025. During the construction effort, Mercer Middle School would be temporarily relocated to the Van Asselt School site about 2 miles to the southeast.
- SPS would make frontage improvements as required by SDOT through the SIP process. During construction, pedestrians would be routed around or directed to avoid construction area using temporary walkways, fencing, and signage.
- Construction personnel are expected to park on-site and on-street in the site vicinity. Unused on-street supply is expected to accommodate the temporary added demand during construction.
- Earthwork export effort during construction is estimated to require an average of 25 truckloads per day and 3 truckloads (3 trucks in and 3 trucks out) per hour on a typical eight-hour construction work day. This volume of truck traffic would be noticeable to residents living adjacent to the site, but is not expected to result in adverse impacts to traffic operations in the site vicinity. Construction access would occur from both 16th Avenue S and S Columbian Way. Since students would be located off-site for the duration of the construction effort, site-generated traffic is expected to be much lower than conditions with the school operating normally.

It is recommended that the contractor and SPS develop a Construction Transportation Management Plan. Details to be included in this plan are described in Section 4.3.

4.2. Long-Term Conditions – Operations

- The proposed Mercer Middle School would have capacity of up to 1,000 students and is expected maintain its current employment of 108 faculty and staff members. This is lower than the school's current capacity of 1,296 students (with the 25 portables).
- Compared to current 2021-22 conditions, the replacement school is estimated to generate increases of 10 trips in the morning peak hour (8:00 to 9:00 A.M.) and 5 trips in the afternoon peak hour (3:15 to 4:15 P.M.), if enrolled to its planned capacity of 1,000 students.
- The project would make several improvements and changes to access and site circulation including: consolidating access on S Columbian Way to one driveway restricted to right-in/right-out only (with new C-curb); adding a new on-site school-bus load/unload loop within the parking lot; creating a new passenger-vehicle load/unload loop on the west side of the site; making frontage Metro bus stop improvements as required by SDOT through the SIP process; and reconfiguring the S Columbian Way / 16th Avenue S to create a 90-degree approach to S Columbian Way with curb-bulbs and C-curb to restrict turns to right only.
- The site reconfiguration would change how staff, family-drivers, school buses, deliveries, and those using non-motorized modes access the site. However, traffic operations within the study area are forecast to remain at LOS D or better for all signalized intersections and LOS A overall with all movements at LOS C or better for unsignalized locations.
- The new combined on-site and on-street (16th Avenue S) school load areas would provide more capacity than are currently accommodated within the drive aisles of the existing school site. Due to the relatively narrow width of 16th Avenue S, it is recommended that family drivers be instructed to use this street in the northbound direction when arriving to drop off or pick up students. These instructions would be incorporated into a Transportation Management Plan (TMP) described in Recommendation B below.



- Automobile parking for 72 vehicles would be provided on site for regular school-day use; load/unload areas could be used for parking on evenings and weekends for events. In total, the site would have 97 parking spaces for event conditions. At the proposed capacity of 1,000 students, the replacement school could generate parking demand ranging from 79 to 93 vehicles on school days. The project could increase on-street parking by 3 to 4 vehicles. The small increase in overspill demand combined with the loss of parking along 16th Avenue S due to frontage improvements would slightly increase utilization from 52% to 58%. However, this level is acceptable to the City and the project-related impacts would not be considered significant.
- Occasional large evening events would continue to draw large attendances. The available parking supply would be sufficient to accommodate occasional events with between 520 and 610 people before on-street parking utilization reaches 85% occupied. However, event parking demand and on-street overspill conditions with the replacement school are expected to be the same or better than the existing school due to the reduction in capacity.

4.3. Recommendations

Even though the proposed Mercer Middle School replacement project would not adversely affect the transportation system in the site vicinity, the following measures are recommended to reduce the traffic and parking impacts with the project.

4.3.1. Short-Term Conditions – Construction

- A. Construction Transportation Management Plan (CTMP):** The District should require the selected contractor to develop a Construction Transportation Management Plan (CTMP) that addresses traffic and pedestrian control during construction of the new facility. It would define truck routes, lane closures, walkway closures, and parking or load/unload area disruptions, as necessary. To the extent possible, the CTMP would direct trucks along the shortest route to arterials and away from residential streets to avoid unnecessary conflicts with resident and pedestrian activity. The CTMP may also include measures to keep adjacent streets clean on a daily basis at the truck exit points (such as street sweeping or on-site truck wheel cleaning) to reduce tracking dirt offsite.

4.3.2. Long-Term Conditions – Operations

- B. Transportation Management Plan (TMP):** Prior to re-opening the replacement school, the District and school administration should establish a Transportation Management Plan (TMP) that encourages reduced automobile trips to and from the site and educates parents and students about the preferred access and circulation patterns for the reconfigured school site. This would include directing family drivers to use 16th Avenue S as a northbound-only route when driving students to school in the morning or picking students up from school in the afternoon.
- C. Develop Neighborhood Communication Plan for School Events:** The District and school administration should develop a neighborhood communication plan to inform nearby neighbors of large events (those expected to draw 500 people or more) each year. The plan should be updated annually (or as events are scheduled) and should provide information about the dates, times, and rough magnitude of attendance. The communication would be intended to allow neighbors to plan for the occasional increase in on-street parking demand that would occur with large events.
- D. Update right-of-way and curb-side signage:** The District should work with SDOT to confirm the locations, extent, and signage (such as times of restrictions) of the school-load zone planned on 16th Avenue S.
- E. Coordinate with Metro Transit:** The District should coordinate with Metro Transit to confirm the ORCA eligibility for students and transit service availability and capacity.



Appendix A

Level of Service Definitions



Levels of service (LOS) are qualitative descriptions of traffic operating conditions. These levels of service are designated with letters ranging from LOS A, which is indicative of good operating conditions with little or no delay, to LOS F, which is indicative of stop-and-go conditions with frequent and lengthy delays. Levels of service for this analysis were developed using procedures presented in the *Highway Capacity Manual, Sixth Edition* (Transportation Research Board, 2016).

Signalized Intersections

Level of service for signalized intersections is defined in terms of average delay for all vehicles that travel through the intersection. Delay can be a cause of driver discomfort, frustration, inefficient fuel consumption, and lost travel time. Specifically, level-of-service criteria are stated in terms of the average delay per vehicle in seconds. Delay is a complex measure and is dependent on a number of variables including: number and type of vehicles by movement, intersection lane geometry, signal phasing, the amount of green time allocated to each phase, transit stops and parking maneuvers. Table A-1 shows the level of service criteria for signalized intersections from the *Highway Capacity Manual, Sixth Edition*.

Table A-1. Level of Service for Signalized Intersections

Level of Service	Average Control Delay Per Vehicle
A	≤ 10 seconds
B	> 10 – 20 seconds
C	> 20 – 35 seconds
D	> 35 – 55 seconds
E	> 55 – 80 seconds
F	> 80 seconds

Source: Transportation Research Board, *Highway Capacity Manual*, Exhibit 19.8, 2016.

Unsignalized Intersections

For unsignalized intersections, level of service is based on the average delay per vehicle for each turning movement. The level of service for all-way stop or roundabout-controlled intersections is based upon the average delay for all vehicles that travel through the intersection. The level of service for a one- or two-way, stop-controlled intersection, delay is related to the availability of gaps in the main street's traffic flow, and the ability of a driver to enter or pass through those gaps. Table A-2 shows the level of service criteria for unsignalized intersections from the *Highway Capacity Manual, Sixth Edition*.

Table A-2. Level of Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay per Vehicle
A	0 – 10 seconds
B	> 10 – 15 seconds
C	> 15 – 25 seconds
D	> 25 – 35 seconds
E	> 35 – 50 seconds
F	> 50 seconds

Source: Transportation Research Board, *Highway Capacity Manual*, Exhibit 20.2, 2016.



Appendix B

Parking Utilization Study Data



Project: Mercer Middle School Replacement

Block Face ID	Street Name	Street Segment	Side of Street	Parking Supply											Total Parking Spaces		
				Unrestricted	2hr 7a-6p Exc Sun/Hol	No Parking 7a-4p exc Sat/Sun/Hol	School Bus Only 7-10a, 1-6p	School Load Only 7a-6p Exc Sat/Sun/Hol	30min LU 9a-9p Everyday	3min PLZ 8-10a, 2-4p Mon & Weds	Disabled	Total Parking	Morning	Mid Morning	Evening		
AA	14TH AVE S	800' BOUNDARY AND S NEVADA ST	W	5	0	0	0	0	0	0	0	5	5	5	5		
AB	14TH AVE S	800' BOUNDARY AND S NEVADA ST	E	5	0	0	0	0	0	0	0	5	5	5	5		
AC	15TH AVE S	800' BOUNDARY AND S NEVADA ST	W	0	0	0	0	0	0	0	0	0	0	0	0		
AD	15TH AVE S	800' BOUNDARY AND S NEVADA ST	E	0	0	0	0	0	0	0	0	0	0	0	0		
AE	16TH AVE S	S DAKOTA ST AND S NEVADA ST	W	0	0	0	0	0	0	0	0	0	0	0	0		
AF	16TH AVE S	S DAKOTA ST AND S NEVADA ST	E	40	0	0	0	0	0	0	0	40	40	40	40		
AG	S NEVADA ST	800' BOUNDARY AND 14TH AVE S	N	5	0	0	0	0	0	0	0	5	5	5	5		
AH	S NEVADA ST	800' BOUNDARY AND 14TH AVE S	S	3	0	0	0	0	0	0	0	3	3	3	3		
AI	S NEVADA ST	14TH AVE S AND 15TH AVE S	N	6	0	0	0	0	0	0	0	6	6	6	6		
AJ	S NEVADA ST	14TH AVE S AND 15TH AVE S	S	8	0	0	0	0	0	0	0	8	8	8	8		
AK	S NEVADA ST	15TH AVE S AND 16TH AVE S	N	0	0	0	0	0	0	0	0	0	0	0	0		
AL	S NEVADA ST	15TH AVE S AND 16TH AVE S	S	0	0	0	0	0	0	0	0	0	0	0	0		
AM	14TH AVE S	S NEVADA ST AND 800' BOUNDARY	W	6	0	0	0	0	0	0	0	6	6	6	6		
AN	14TH AVE S	S NEVADA ST AND 800' BOUNDARY	E	7	0	0	0	0	0	0	0	7	7	7	7		
AO	14TH AVE S	800' BOUNDARY AND S OREGON ST	W	8	0	0	0	0	0	0	0	8	8	8	8		
AP	14TH AVE S	800' BOUNDARY AND S OREGON ST	E	9	0	0	0	0	0	0	0	9	9	9	9		
AQ	15TH AVE S	S NEVADA ST AND S OREGON ST	W	0	18	0	0	0	0	0	0	18	18	18	18		
AR	15TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	E	0	0	0	0	0	0	0	0	0	0	0	0		
AS	16TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	W	0	0	0	0	0	0	0	0	0	0	0	0		
AT	16TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	E	13	0	0	35	4	0	0	0	52	13	48	52		
AU	S OREGON ST	800' BOUNDARY AND 14TH AVE S	N	6	0	0	0	0	0	0	0	6	6	6	6		
AV	S OREGON ST	800' BOUNDARY AND 14TH AVE S	S	5	0	0	0	0	0	0	0	5	5	5	5		
AW	S OREGON ST	14TH AVE S AND 15TH AVE S	N	6	0	0	0	0	0	0	0	6	6	6	6		
AX	S OREGON ST	14TH AVE S AND 15TH AVE S	S	7	0	0	0	0	0	0	0	7	7	7	7		
AY	S COLUMBIAN WAY	15TH S AVE S AND 16TH AVE S	W	1	0	0	0	0	0	0	0	1	1	1	1		

Project: Mercer Middle School Replacement

Block Face ID	Street Name	Street Segment	Side of Street	Parking Supply											
				Unrestricted	2hr 7a-6p Exc Sun/Hol	No Parking 7a-4p exc Sat/Sun/Hol	School Bus Only 7-10a, 1-6p	School Load Only 7a-6p Exc Sat/Sun/Hol	30min LU 9a-9p Everyday	3min PLZ 8-10a, 2-4p Mon & Weds	Disabled	Total Parking	Total Parking Spaces		
													Morning	Mid Morning	Evening
AZ	S COLUMBIAN WAY	15TH S AVE S AND 16TH AVE S	E	0	0	0	0	0	0	0	0	0	0	0	0
BA	14TH AVE S	S OREGON ST AND 800' BOUNDARY	W	7	0	0	0	0	0	0	0	7	7	7	7
BB	14TH AVE S	S OREGON ST AND 800' BOUNDARY	E	6	0	0	0	0	0	0	0	6	6	6	6
BC	15TH AVE S	S OREGON ST AND S SNOQUALMIE ST	W	18	0	0	0	0	1	1	0	20	20	20	20
BD	15TH AVE S	S COLUMBIAN WAY AND S SNOQUALMIE ST	E	8	0	0	0	0	0	0	0	8	8	8	8
BE	16TH AVE S	S COLUMBIAN WAY AND 800' BOUNDARY	W	10	0	0	0	0	0	0	0	10	10	10	10
BF	16TH AVE S	S COLUMBIAN WAY AND 800' BOUNDARY	E	0	0	0	0	0	0	0	0	0	0	0	0
BG	S COLUMBIAN WAY	16TH AVE S AND VETRN HOSPITAL DR	SW	2	0	0	0	0	0	0	0	2	2	2	2
BH	S COLUMBIAN WAY	16TH AVE S AND VETRN HOSPITAL DR	NE	0	0	0	0	0	0	0	0	0	0	0	0
BI	S SNOQUALMIE ST	15TH AVE S AND 16TH AVE S	N	2	0	0	0	0	0	0	0	2	2	2	2
BJ	S SNOQUALMIE ST	15TH AVE S AND 16TH AVE S	S	1	0	0	0	0	0	0	0	1	1	1	1
BK	S SNOQUALMIE ST	16TH AVE S AND S COLUMBIAN WAY	N	0	0	0	0	0	0	0	0	0	0	0	0
BL	S SNOQUALMIE ST	16TH AVE S AND S COLUMBIAN WAY	S	9	0	0	0	0	0	0	0	9	9	9	9
BM	S SNOQUALMIE ST	S COLUMBIAN WAY AND 800' BOUNDARY	N	0	0	0	0	0	0	0	0	0	0	0	0
BN	S SNOQUALMIE ST	S COLUMBIAN WAY AND 800' BOUNDARY	S	10	0	3	0	0	0	0	0	13	10	10	13
BO	S COLUMBIAN WAY	S SNOQUALMIE ST AND 800' BOUNDARY	SW	0	0	0	0	0	0	0	0	0	0	0	0
BP	S COLUMBIAN WAY	S SNOQUALMIE ST AND 800' BOUNDARY	NE	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL				213	18	3	35	4	1	1	0	275	233	268	275

Project: Mercer Middle School Replacement

Block Face ID	Street Name	Street Segment	Side of Street	Parking Supply			Parking Occupancy											
				Total Parking Spaces			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
				Morning	Mid Morning	Evening	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021
AA	14TH AVE S	800' BOUNDARY AND S NEVADA ST	W	5	5	5	1	1	1	0	1	1	1	0	2	0	1	0
AB	14TH AVE S	800' BOUNDARY AND S NEVADA ST	E	5	5	5	2	2	2	2	2	3	3	1	2	3	3	1
AC	15TH AVE S	800' BOUNDARY AND S NEVADA ST	W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AD	15TH AVE S	800' BOUNDARY AND S NEVADA ST	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AE	16TH AVE S	S DAKOTA ST AND S NEVADA ST	W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AF	16TH AVE S	S DAKOTA ST AND S NEVADA ST	E	40	40	40	18	19	19	21	28	29	29	32	22	30	26	28
AG	S NEVADA ST	800' BOUNDARY AND 14TH AVE S	N	5	5	5	2	2	2	3	1	1	1	3	2	1	2	3
AH	S NEVADA ST	800' BOUNDARY AND 14TH AVE S	S	3	3	3	1	1	1	1	1	2	2	1	1	1	1	2
AI	S NEVADA ST	14TH AVE S AND 15TH AVE S	N	6	6	6	1	1	1	1	3	4	4	1	1	0	1	2
AJ	S NEVADA ST	14TH AVE S AND 15TH AVE S	S	8	8	8	5	5	5	5	5	4	5	4	5	6	6	6
AK	S NEVADA ST	15TH AVE S AND 16TH AVE S	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AL	S NEVADA ST	15TH AVE S AND 16TH AVE S	S	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AM	14TH AVE S	S NEVADA ST AND 800' BOUNDARY	W	6	6	6	4	4	4	4	3	4	4	2	3	7	5	3
AN	14TH AVE S	S NEVADA ST AND 800' BOUNDARY	E	7	7	7	4	3	4	3	3	4	4	3	4	4	4	4
AO	14TH AVE S	800' BOUNDARY AND S OREGON ST	W	8	8	8	3	3	3	4	3	3	3	4	3	6	5	2
AP	14TH AVE S	800' BOUNDARY AND S OREGON ST	E	9	9	9	4	3	4	2	6	4	5	2	4	3	4	2
AQ	15TH AVE S	S NEVADA ST AND S OREGON ST	W	18	18	18	8	8	8	11	7	12	10	10	9	7	8	11
AR	15TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AS	16TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	W	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AT	16TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	E	13	48	52	2	2	2	3	12	12	12	44	26	20	23	26
AU	S OREGON ST	800' BOUNDARY AND 14TH AVE S	N	6	6	6	2	2	2	2	4	3	4	2	2	2	2	1
AV	S OREGON ST	800' BOUNDARY AND 14TH AVE S	S	5	5	5	2	3	3	4	3	3	3	3	5	5	5	3
AW	S OREGON ST	14TH AVE S AND 15TH AVE S	N	6	6	6	6	6	6	7	5	7	6	7	5	4	5	7
AX	S OREGON ST	14TH AVE S AND 15TH AVE S	S	7	7	7	8	7	8	5	7	7	7	8	7	7	7	7
AY	S COLUMBIAN WAY	15TH S AVE S AND 16TH AVE S	W	1	1	1	1	1	1	1	1	1	1	1	0	1	1	0
AZ	S COLUMBIAN WAY	15TH S AVE S AND 16TH AVE S	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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Block Face ID	Street Name	Street Segment	Side of Street	Parking Supply			Parking Occupancy											
				Total Parking Spaces			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
				Morning	Mid Morning	Evening	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021
BA	14TH AVE S	S OREGON ST AND 800' BOUNDARY	W	7	7	7	6	5	6	5	5	2	4	5	5	6	6	5
BB	14TH AVE S	S OREGON ST AND 800' BOUNDARY	E	6	6	6	5	4	5	4	5	4	5	2	4	5	5	5
BC	15TH AVE S	S OREGON ST AND S SNOQUALMIE ST	W	20	20	20	10	9	10	11	10	6	8	8	11	8	10	12
BD	15TH AVE S	S COLUMBIAN WAY AND S SNOQUALMIE ST	E	8	8	8	5	2	4	2	5	3	4	2	3	3	3	4
BE	16TH AVE S	S COLUMBIAN WAY AND 800' BOUNDARY	W	10	10	10	1	1	1	1	1	2	2	2	1	1	1	1
BF	16TH AVE S	S COLUMBIAN WAY AND 800' BOUNDARY	E	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BG	S COLUMBIAN WAY	16TH AVE S AND VETRN HOSPITAL DR	SW	2	2	2	1	1	1	1	1	2	2	1	1	1	1	1
BH	S COLUMBIAN WAY	16TH AVE S AND VETRN HOSPITAL DR	NE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BI	S SNOQUALMIE ST	15TH AVE S AND 16TH AVE S	N	2	2	2	2	2	2	2	2	1	2	2	2	2	2	1
BJ	S SNOQUALMIE ST	15TH AVE S AND 16TH AVE S	S	1	1	1	0	0	0	1	0	0	0	1	0	0	0	1
BK	S SNOQUALMIE ST	16TH AVE S AND S COLUMBIAN WAY	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BL	S SNOQUALMIE ST	16TH AVE S AND S COLUMBIAN WAY	S	9	9	9	1	1	1	1	6	2	4	0	1	0	1	0
BM	S SNOQUALMIE ST	S COLUMBIAN WAY AND 800' BOUNDARY	N	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BN	S SNOQUALMIE ST	S COLUMBIAN WAY AND 800' BOUNDARY	S	10	10	13	8	8	8	8	11	12	12	9	9	9	9	8
BO	S COLUMBIAN WAY	S SNOQUALMIE ST AND 800' BOUNDARY	SW	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BP	S COLUMBIAN WAY	S SNOQUALMIE ST AND 800' BOUNDARY	NE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL				233	268	275	113	106	110	115	141	138	140	160	140	142	141	146

Project: Mercer Middle School Replacement

Block Face ID	Street Name	Street Segment	Side of Street	Parking Supply			Parking Utilization											
				Total Parking Spaces			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
				Morning	Mid Morning	Evening	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021
AA	14TH AVE S	800' BOUNDARY AND S NEVADA ST	W	5	5	5	20%	20%	20%	0%	20%	20%	20%	0%	40%	0%	20%	0%
AB	14TH AVE S	800' BOUNDARY AND S NEVADA ST	E	5	5	5	40%	40%	40%	40%	40%	60%	50%	20%	40%	60%	50%	20%
AC	15TH AVE S	800' BOUNDARY AND S NEVADA ST	W	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AD	15TH AVE S	800' BOUNDARY AND S NEVADA ST	E	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AE	16TH AVE S	S DAKOTA ST AND S NEVADA ST	W	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AF	16TH AVE S	S DAKOTA ST AND S NEVADA ST	E	40	40	40	45%	48%	46%	53%	70%	73%	71%	80%	55%	75%	65%	70%
AG	S NEVADA ST	800' BOUNDARY AND 14TH AVE S	N	5	5	5	40%	40%	40%	60%	20%	20%	20%	60%	40%	20%	30%	60%
AH	S NEVADA ST	800' BOUNDARY AND 14TH AVE S	S	3	3	3	33%	33%	33%	33%	33%	67%	50%	33%	33%	33%	33%	67%
AI	S NEVADA ST	14TH AVE S AND 15TH AVE S	N	6	6	6	17%	17%	17%	17%	50%	67%	58%	17%	17%	0%	8%	33%
AJ	S NEVADA ST	14TH AVE S AND 15TH AVE S	S	8	8	8	63%	63%	63%	63%	63%	50%	56%	50%	63%	75%	69%	75%
AK	S NEVADA ST	15TH AVE S AND 16TH AVE S	N	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AL	S NEVADA ST	15TH AVE S AND 16TH AVE S	S	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AM	14TH AVE S	S NEVADA ST AND 800' BOUNDARY	W	6	6	6	67%	67%	67%	67%	50%	67%	58%	33%	50%	117%	83%	50%
AN	14TH AVE S	S NEVADA ST AND 800' BOUNDARY	E	7	7	7	57%	43%	50%	43%	43%	57%	50%	43%	57%	57%	57%	57%
AO	14TH AVE S	800' BOUNDARY AND S OREGON ST	W	8	8	8	38%	38%	38%	50%	38%	38%	38%	50%	38%	75%	56%	25%
AP	14TH AVE S	800' BOUNDARY AND S OREGON ST	E	9	9	9	44%	33%	39%	22%	67%	44%	56%	22%	44%	33%	39%	22%
AQ	15TH AVE S	S NEVADA ST AND S OREGON ST	W	18	18	18	44%	44%	44%	61%	39%	67%	53%	56%	50%	39%	44%	61%
AR	15TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	E	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AS	16TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	W	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
AT	16TH AVE S	S NEVADA ST AND S COLUMBIAN WAY	E	13	48	52	15%	15%	15%	23%	25%	25%	25%	92%	50%	38%	44%	50%
AU	S OREGON ST	800' BOUNDARY AND 14TH AVE S	N	6	6	6	33%	33%	33%	33%	67%	50%	58%	33%	33%	33%	33%	17%
AV	S OREGON ST	800' BOUNDARY AND 14TH AVE S	S	5	5	5	40%	60%	50%	80%	60%	60%	60%	60%	100%	100%	100%	60%
AW	S OREGON ST	14TH AVE S AND 15TH AVE S	N	6	6	6	100%	100%	100%	117%	83%	117%	100%	117%	83%	67%	75%	117%
AX	S OREGON ST	14TH AVE S AND 15TH AVE S	S	7	7	7	114%	100%	107%	71%	100%	100%	100%	114%	100%	100%	100%	100%
AY	S COLUMBIAN WAY	15TH S AVE S AND 16TH AVE S	W	1	1	1	100%	100%	100%	100%	100%	100%	100%	100%	0%	100%	50%	0%
AZ	S COLUMBIAN WAY	15TH S AVE S AND 16TH AVE S	E	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BA	14TH AVE S	S OREGON ST AND 800' BOUNDARY	W	7	7	7	86%	71%	79%	71%	71%	29%	50%	71%	71%	86%	79%	71%

Project: Mercer Middle School Replacement

Block Face ID	Street Name	Street Segment	Side of Street	Parking Supply			Parking Utilization											
				Total Parking Spaces			Morning (7:00 A.M. to 7:45 A.M.)				Mid Morning (10:30 A.M. to 11:15 A.M.)				Evening (7:30 P.M. to 8:15 P.M.)			
				Morning	Mid Morning	Evening	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021	Tuesday 11.16.2021	Thursday 11.18.2021	School Day Average	Summer Sample - Thursday 8.19.2021
BB	14TH AVE S	S OREGON ST AND 800' BOUNDARY	E	6	6	6	83%	67%	75%	67%	83%	67%	75%	33%	67%	83%	75%	83%
BC	15TH AVE S	S OREGON ST AND S SNOQUALMIE ST	W	20	20	20	50%	45%	48%	55%	50%	30%	40%	40%	55%	40%	48%	60%
BD	15TH AVE S	S COLUMBIAN WAY AND S SNOQUALMIE ST	E	8	8	8	63%	25%	44%	25%	63%	38%	50%	25%	38%	38%	38%	50%
BE	16TH AVE S	S COLUMBIAN WAY AND 800' BOUNDARY	W	10	10	10	10%	10%	10%	10%	10%	20%	15%	20%	10%	10%	10%	10%
BF	16TH AVE S	S COLUMBIAN WAY AND 800' BOUNDARY	E	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BG	S COLUMBIAN WAY	16TH AVE S AND VETRN HOSPITAL DR	SW	2	2	2	50%	50%	50%	50%	50%	100%	75%	50%	50%	50%	50%	50%
BH	S COLUMBIAN WAY	16TH AVE S AND VETRN HOSPITAL DR	NE	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BI	S SNOQUALMIE ST	15TH AVE S AND 16TH AVE S	N	2	2	2	100%	100%	100%	100%	100%	50%	75%	100%	100%	100%	100%	50%
BJ	S SNOQUALMIE ST	15TH AVE S AND 16TH AVE S	S	1	1	1	0%	0%	0%	100%	0%	0%	0%	100%	0%	0%	0%	100%
BK	S SNOQUALMIE ST	16TH AVE S AND S COLUMBIAN WAY	N	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BL	S SNOQUALMIE ST	16TH AVE S AND S COLUMBIAN WAY	S	9	9	9	11%	11%	11%	11%	67%	22%	44%	0%	11%	0%	6%	0%
BM	S SNOQUALMIE ST	S COLUMBIAN WAY AND 800' BOUNDARY	N	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BN	S SNOQUALMIE ST	S COLUMBIAN WAY AND 800' BOUNDARY	S	10	10	13	80%	80%	80%	80%	110%	120%	115%	90%	69%	69%	69%	62%
BO	S COLUMBIAN WAY	S SNOQUALMIE ST AND 800' BOUNDARY	SW	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
BP	S COLUMBIAN WAY	S SNOQUALMIE ST AND 800' BOUNDARY	NE	0	0	0	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
TOTAL				233	268	275	48%	45%	47%	49%	53%	51%	52%	60%	51%	52%	51%	53%

APPENDIX B: NOISE MEMORANDUM



5309 Shilshole Avenue NW
Suite 200
Seattle, WA 98107
206.789.9658 [phone](#)
206.789.9684 [fax](#)

esassoc.com

memorandum

date March 31, 2022

to Vincent Gonzales, Seattle Public Schools

cc Justine Kim, SOJ

from Kurt Richman, ESA

subject DRAFT Mercer International Middle School Replacement Project – Noise Technical Memorandum

Seattle Public Schools (SPS) is proposing to replace Mercer International Middle School (Mercer Middle School). The Mercer Middle School replacement project will receive funding from the 2019 Building Excellence V (BEX V) Capital Levy funds and from the Washington Office of Superintendent of Public Instruction (OSPI). The school is located at 1600 South Columbian Way, Seattle, WA 98108.

The proposed project would construct a new multi-story middle school with a target of up to approximately 176,000 square feet. When complete, the school would have permanent enrollment capacity for up to 1,000 students in grades 6 through 8. Based on staffing for other Seattle middle schools, SPS estimates that Mercer Middle School has approximately 108 employees if/when it is enrolled to its capacity of 1,000 students.

The proposed new school building would replace the existing Mercer Middle School in the Beacon Hill neighborhood, along South Columbian Way and 16th Avenue South. A parking lot would be located at the southeastern portion of the site and improvements would be made along 16th Avenue South for family-student drop-offs.

This memorandum describes the methodology of identifying potential noise impacts due to construction and operation of the redeveloped Mercer Middle School.

Fundamentals of Noise

The decibel (dB) is a conventional unit for measuring the amplitude of sound as it accounts for the large variations in sound pressure amplitude and reflects the way people perceive changes in sound. When describing sound and its effect on humans, A-weighted (dBA) sound levels are typically used to account for the response of the human ear. The term “A-weighted” refers to a filtering of the noise signal in a manner corresponding to the way the human ear perceives sound. Leq is the equivalent sound level over a specified period of time, typically, 1 hour (i.e., Leq(h)). Leq is also referred to as the average sound level.

People judge the relative magnitude of sound sensation by subjective terms such as “loudness” or “noisiness.” A change in sound level of 3 dB is considered “just perceptible,” a change in sound level of 5 dB is considered “clearly noticeable,” and a change of 10 dB is recognized as “twice as loud.”

Because decibels are logarithmic values, they cannot be combined by normal algebraic addition. For example, when the decibel values of two sources differ by 0 to 1 dB, combining them would add 3 dB to the higher level for the combined sound level. When the decibel levels of two sources differ by more than 1 dB, combining them would add between 0 and 3 dBA to the higher level, depending on the relative difference. At a difference of 10 dB or more, the higher noise source dominates, and there is no addition to the higher-level source (i.e., there is no effective change in the overall decibel value with or without the addition of the lower noise level source).

When noise propagates over a distance, the noise level reduces (i.e., attenuates) with distance. The degree to which it diminishes depends on the type of noise source and the propagation path. Noise from a localized source (i.e., point source) propagates uniformly outward in a spherical pattern, referred to as “spherical spreading.” Stationary point sources of noise, including stationary mobile sources (such as idling vehicles), attenuate at a rate of 6 dBA for acoustically “hard” sites and 7.5 dBA for acoustically “soft” sites, for each doubling of distance from the reference measurement, as their energy is continuously spread out over a spherical surface. Hard sites are those with a reflective surface between the source and the receiver, such as asphalt or concrete surfaces or smooth bodies of water. No attenuation from the ground surface is assumed for hard sites, and the 6 dBA reduction in noise levels with doubling of distance is only from the geometric spreading of the noise from the source (e.g., for hard sites, 80 dBA at 50 feet attenuates to 74 at 100 feet, 68 dBA at 200 feet). Soft sites are those with an absorptive ground surface, such as soft dirt, grass, or scattered bushes and trees; in addition to the 6 dBA reduction from geometric spreading, soft sites provide an additional attenuation of up to 1.5 dBA per doubling distance from the surface. In a typical analysis, the given ground surface is somewhere between a hard and a soft site; therefore, for a conservative estimate, the hard-site attenuation rate of 6 dBA for point sources is typically used in analyses, rather than attempt to determine the exact surface conditions between each source and receptor.

Roadways and highways consist of several localized noise sources on a defined path and hence are treated as “line” sources, which approximate the effect of several point sources. Noise from a line source propagates over a cylindrical surface, often referred to as “cylindrical spreading.” Line sources (e.g., traffic noise from vehicles) attenuate at a rate of between 3 dBA for hard sites and 4.5 dBA for soft sites for each doubling of distance from the reference measurement. Therefore, noise due to a line source attenuates less (about half) with distance than that of a point source.

City of Seattle Municipal Code

The City of Seattle Municipal Code (SMC Chapter 25.08) regulates noise in the City. Noise is typically defined as an unwanted sound that can disrupt quality of life (EPA 2021). The City sets exterior sound level limits according to the land use of both the property generating the noise (the source) and the property receiving the noise. From one property to another when both properties are within a residential district, the maximum allowable noise during weekday daytime and evening hours (7 a.m. to 10 p.m.) is limited to 55 Leq (dBA). This is the maximum noise that may be generated from a specific property that is experienced by another property (not the cumulative noise from all surrounding properties and activities).

SMC Chapter 25.08.500E further regulates noises considered “unreasonable” including “loud and raucous, and frequent repetitive or continuous sounds made by the amplified or unamplified human voice” between the hours

of 10 p.m. and 7 a.m. During these nighttime hours, maximum allowable noise from one property to another within residential districts is reduced to 45 Leq (dBA). Mercer Middle School is located within residential districts and neighbors Major Institution Overlay per City of Seattle Zoning.

For noise sources that are not continuous, higher levels are allowed for short durations. The code specifies that shorter duration noises up to 15 dBA above the continuous limit are allowable, as long as the hourly Leq exterior sound level limit is not exceeded (SMC 25.08.410.B).

SMC Chapter 25.08.425 describes sounds created by construction and maintenance equipment. Considering the proposed project is a public project, the exterior sound level limits presented in **Table 1**, as measured from the property line of the real property of another person or at a distance of 50 feet from the construction or maintenance equipment making the sound, whichever is greater, may be exceeded between 7 a.m. and 10 p.m. on weekdays and between 9 a.m. and 10 p.m. On weekends and legal holidays, it may be exceeded by 25 dBA for equipment on construction sites, including but not limited to crawlers, tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, trenchers, compactors, compressors, and pneumatic-powered equipment.

TABLE 1. EXTERIOR SOUND LEVEL LIMITS

District of Sound Source	Residential Receiving Property (Experiencing the Noise)	
	7 a.m.–10 p.m. Limit (Leq)	10 p.m.–7 a.m. Limit (Leq)
Residential	55 dBA	45 dBA
Commercial	57 dBA	47 dBA
Industrial	60 dBA	50 dBA
SOURCE: SMC Chapter 25.08.410		

SMC Chapter 25.08.540A exempts sounds created by bells, chimes, or carillons not operating for more than 5 minutes in any one hour for the hours between 7 a.m. and 10 p.m. on weekdays and between 9 a.m. and 10 p.m. on weekends and legal holidays.

Noise Sensitive Receivers

Noise sensitive receivers in the vicinity of Mercer Middle School include single- and multi-family residences and the Seattle VA Hospital. The nearest residences are located west and southwest of the school, across 16th Avenue South. The VA Hospital's Mental Health building and parking structure border Mercer Middle School's eastern property boundary.

Existing Condition

The primary source of noise affecting sensitive receptors in the project vicinity is from traffic along South Columbian Way and 16th Avenue South. Other noise sources include overhead air traffic, sirens from emergency response, typical domestic and commercial noise common to urban environments, and activities associated with the middle school. Of the noise generating activities that occur at Mercer Middle School, the most substantial noise levels occur during morning student drop-offs and afternoon dismissals.

Existing conditions during peak school activity were measured using Larson Davis LxT Sound Track noise meters. These meters were factory calibrated within the last year and field calibrated immediately before and after measurement. SLM1 was placed on the southern project boundary, approximately 60 feet north of the South Columbian Way centerline. SLM2 was placed on the western project boundary, approximately 45 feet from the 16th Avenue South centerline. These locations were selected to represent outdoor noise levels at the surrounding sensitive receivers. **Table 2** summarizes the morning and afternoon peak hours and measured noise levels. Note that the school has a shorter class schedule on Wednesdays, therefore the afternoon peak period was measured between 2:00 pm and 3:00 pm on Wednesday and between 3:15 pm and 4:15 pm on Tuesday. Measured noise levels surrounding the project currently exceed 55 dBA during the peak morning and afternoon periods.

TABLE 2. EXISTING NOISE LEVELS

Measurement ID	Nearest Roadway	Distance from Roadway Centerline (feet)	Peak Period	Noise Level (dBA)
SLM1	S Columbian Way west of Veteran Hospital Dr	60	February 16, 8:00 a.m.–9:00 a.m.	65
			February 15, 3:15 p.m.–4:15 p.m.	66
SLM2	16th Avenue S north of S Columbian Way	45	February 17, 8:00 a.m.–9:00 a.m.	57
			February 16, 2:30 p.m.–3:30 p.m.	57
SOURCE: ESA, 2022				

Proposed Project Noise Assessments

The project would reduce student enrollment capacity from approximately 1,300 students to 1,000 students and would not change the types of noise or timing of noise at the school. Residents west of the school would likely notice a slight reduction in noise at the beginning and end of the school day because the bus drop-off area would be relocated to the southeast parking lot. Noise levels during lunch and recess periods would be similar to existing levels. The following subsections describe potential noise sources and their effects to the neighboring properties.

Parking

The proposed project would redevelop Mercer Middle School’s southeast parking lot and add a new one-way loop for family-student drop-offs along 16th Avenue South. The redeveloped parking lot would be accessed from South Columbian Way and include approximately 72 stalls for parking. The bus drop-off area would be relocated from 16th Avenue South to the redeveloped parking lot, farther from sensitive receivers. The new family-student drop-off would be accessed from 16th Avenue South and include 12 parking stalls. The family-student drop-off loop would redirect traffic approximately 30 feet east of the 16th Avenue South roadway centerline, farther from sensitive receivers.

The Federal Transit Administration’s (FTA) Transit Noise and Vibration Impact Assessment Manual includes the methodology to estimate parking noise based on the number of cars. From each parking space, the estimated noise levels would be 45 dBA for 72 spaces and 37 dBA for 12 spaces. Since none of the parking spaces exceed 55 dBA and noise from bus loading is moving farther from sensitive receivers, it is considered less-than-significant impact.

Students

Similar to the existing conditions, students would generate noise when they exit buildings for recess, lunch, and/or beginning and end of the school. Students may be located on available benches throughout the school for recess and lunch time. In addition, a new outdoor learning area is proposed in the northeast corner of the site. This area would be designed with canopies, treated with sound absorptive material to shield the area from airplane noise and increase speech intelligibility. Recess, lunch time, and instruction at the outdoor learning area would be short-term events. In the mornings and afternoons, students would gather around the drop-off, pick-up, and building entrance areas. Noise from students gathering at the bus drop-off area would be relocated from 16th Avenue South to the redeveloped parking lot, farther from sensitive receivers. The noise from staff and students' voices would also be short-term events. The main entrance and drop-off areas are approximately 100 feet away from the nearest residential property line. The outdoor learning area is approximately 150 feet away from the VA's Mental Health Building. Due to the short-term events and their distance away from residential properties, the hourly noise level would not exceed 55 dBA, which would be considered a less-than-significant impact.

Vehicular Traffic

The traffic report included 2025 traffic volumes with and without the project. Projected traffic volumes were modeled with Federal Highway Administration (FHWA) Traffic Noise Model (TNM) version 2.5 (FHWA 2004). **Table 3** includes the PM peak hour volumes and predicted noise levels at the receiver property line closest to Mercer Middle School.

TABLE 3. 2025 TRAFFIC VOLUMES AND ESTIMATED NOISE LEVELS

Roadways	2025 PM Peak Hour Traffic Volumes		Estimated Noise Levels at Receiver Property Line Closest to Mercer Middle School		Distance between Roadway and Receiver Property Line Closest to Mercer Middle School
	Without Project	With Project	Without Project	With Project	
16th Avenue S	51 ^a	135	54 dBA ^a	52 dBA	40 feet
S Columbian Way	1166	1296	60 dBA	60 dBA	95 feet

NOTE:

^a Without project traffic volumes and results along 16th Avenue S include traffic noise from 11 school buses. With the project, bus trips would access the southeast parking lot from S Columbian Way.

SOURCE: Heffron, 2022; ESA, 2022.

While overall traffic volumes from light-duty vehicles would increase along 16th Avenue South, the bus drop-off area would be relocated to the southeast parking lot and the new family-student one-way drop-off loop would redirect traffic farther from existing sensitive receivers, resulting in lower traffic-related noise levels along 16th Avenue South. Noise levels due to vehicular traffic along 16th Avenue South would not exceed 55 dBA for the proposed project. However, noise levels from South Columbian Way would exceed 55 dBA at the nearest sensitive receiver. Note that the projected traffic volume would exceed 60 dBA with or without the project and there would be no increase due to the project. Therefore, all noise due to vehicular traffic would be considered a less-than-significant impact.

Construction

SMC Chapter 25.08.425 describes sounds created by construction and maintenance equipment. Considering the proposed project is a public project, the exterior sound level limits presented in Table 1, as measured from the

property line of the real property of another person or at a distance of 50 feet from the construction or maintenance equipment making the sound, whichever is greater, may be exceeded between 7 a.m. and 10 p.m. on weekdays and between 9 a.m. and 10 p.m. on weekends and legal holidays. It may be exceeded by 25 dBA for equipment on construction sites, including but not limited to crawlers, tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, graders, off-highway trucks, ditchers, trenchers, compactors, compressors, and pneumatic-powered equipment. The following are common practices to reduce the noise from construction activities:

Construction hours should be limited to follow SMC.

Construction equipment is maintained in a good condition and equipped with mufflers.

If feasible, stay away from noise sensitive receivers.

When equipment is not used, it should be turned off instead of idling.

If necessary, temporary noise barrier can be installed to block the direct line-of-sight.

Residences in the vicinity of the school should be notified before construction starts.

It is assumed that the contractor would follow SMC to limit the noise levels to less than 80 dBA as measured from the property line of the real property of another person or at a distance of 50 feet from the construction or maintenance equipment making the sound, whichever is greater. Therefore, the impact would be considered less than significant.

References

Seattle Public Schools (SPS). 2021. Mercer International Middle School. Schematic Design Summary, Preliminary Project Description, and Narratives. December 2021.

City of Seattle. City of Seattle Municipal Code. Accessed February 2022.

Environmental Protection Agency (EPA). 2022. Clean Air Act Title IV – Noise Pollution. Available at <https://www.epa.gov/clean-air-act-overview/clean-air-act-title-iv-noise-pollution>. Accessed February 2022.

Federal Highway Administration (FHWA). 2004. FHWA Traffic Noise Model Version 2.5. April 2004.

Federal Transit Administration's (FTA) 2018. Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. September 2018.

Heffron. 2022. Draft Transportation Technical Report for the Mercer Middle School Replacement Project. March 3, 2022.

APPENDIX C: ARBORIST REPORT

Arborist Report

TO: Seattle Public Schools, Shields|Obletz|Johnsen

SITE: Asa Mercer International Middle School
1600 S Columbian Way, Seattle, WA 98108

RE: Arborist Tree Inventory, Assessment, and Construction Evaluation

DRAFT DATE: July 20, 2021

REVISED DATE: January 26, 2022

PROJECT TEAM: Sean Dugan, ISA Board Certified Master Arborist #PN-5459B
Registered Consulting Arborist 457
ISA Qualified Tree Risk Assessor

Joseph Sutton-Holcomb, ISA Certified Arborist #PN-8397AM
Municipal Specialist, Qualified Tree Risk Assessor

ATTACHED: Table of Trees; Air Excavation Memo (dated 11.29.2021)

REFERENCED: Mercer Middle School 100% Schematic Design (Bassetti Architects Dec. 10, 2021)

Summary

Tree Solutions inventoried and assessed 60 trees on the Asa Mercer International Middle School site as required for development projects by the city of Seattle.¹ Fifty-six trees are regulated and viable. Two of the assessed trees, 409 and 433, are not viable due to being in poor health and structural condition. Trees 443 and 445 do not meet the biological definition of a tree.

Six regulated trees meet the exceptional tree criteria outlined in the Seattle Director's Rule 16-2008.²

We reviewed the proposed development plans and evaluated for potential negative impacts to trees. Thirty-eight regulated trees, or 68 percent, will be retained. All retained trees should be protected following the tree protection specifications outlined in this report and be in accord with Section 01 56 39 Tree and Plant Protection and Salvage project requirements and those set forth in the city of Seattle Municipal Code. Tree protection specifications should be included in the plan sets for the proposed development scheme.

Eighteen regulated trees, or 32 percent, are proposed to be removed for various reasons. One exceptional tree, Tree 452, will need to be removed to allow for the construction of the new school.

Forty-eight (48) trees inventoried are located on adjacent properties with overhanging canopies. The majority of off-site trees are located to the east of the school district property on a parcel owned by the

¹ SMC 25.11

² Sugimura, D.W. "DPD Director's Rule 16-2008". Seattle, WA, 2009

United States Department of Veterans Affairs. According to data from the Seattle Department of Construction and Inspections GIS map, the trees in this area are part of a Major Institution Overlay. Development in this area is governed by the VA Puget Sound Health Care System Master Plan.

Based on our knowledge, training, and experience, it is our opinion that seven of these trees present an elevated risk potential and have been proposed for removal.

Assignment & Scope of Report

This report outlines a tree inventory by Sean Dugan and Joseph Sutton-Holcomb, of Tree Solutions Inc, On July 14, 2021. We were asked to document and evaluate all regulated trees on the site and identify any exceptional trees, as defined by Seattle Director's Rule 16-2008. We were asked to evaluate trees on adjacent properties with overhanging canopies. Mr. Sutton-Holcomb made an additional site visit to perform pneumatic air excavation exploratory work on Nov. 23, 2021. Included within the report are observations, data collected, and discussion of findings.

We were asked to review provided documents, maps, and plans, and produce an Arborist Report outlining our findings and recommendations. We were asked to evaluate and provide comments on final permitted construction documents throughout the design phases for project planning and implementation. Justine Kim, of Shiels|Obletz|Johnsen, representing Seattle Public Schools, requested these services to acquire information for project planning purposes.

On-site trees were assigned a numerical identifier between 402 and 461 and were physically tagged. The numbers shown on the annotated survey and table of trees correspond with the physical tags on-site, unless otherwise noted. Adjacent site trees were given alphabetical identifiers and were not physically tagged. These adjacent trees are labeled alphabetically A through AV, with the "A" prefix assigned to trees inventoried after A-Z had been assigned to adjacent trees.

ROW trees

The annotated survey attached to this report includes species information and diameter measurements for street trees shown on the survey. We sourced this information from the SDOT Street Tree Inventory Map. Diameter measurements from the map were taken in 2018.

Observations, Discussion, and Recommendations

Site

The tree inventory took place on Parcel #1624049214, a 365,468 square foot lot in the Beacon Hill neighborhood in Seattle, WA. Seattle Public Schools owns the property. Several single-story school buildings and portable structures currently exist on the site.

The Seattle Department of Construction and Inspections (SDCI) GIS map indicates that certain areas on the east and southwest portions of the property are Steep Slope Environmentally Critical Areas (ECAs) (Figure 1). The SDCI GIS map shows no other ECAs on the site.

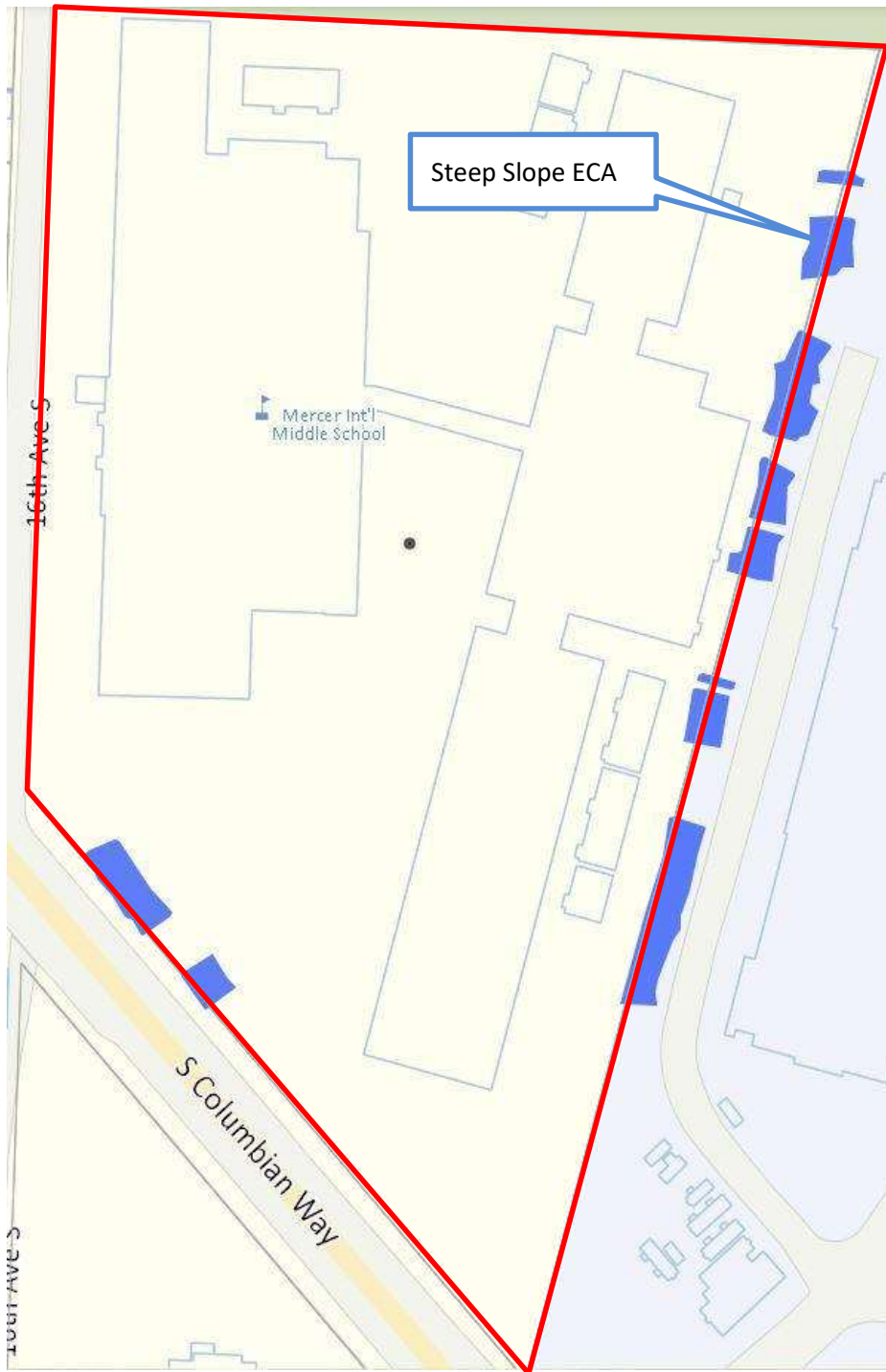


Figure 1. An aerial view of the site. The red lines show the approximate boundaries of the property. The areas shaded blue indicate Steep Slope Environmentally Critical Areas. (Source: Seattle Department of Construction and Inspections GIS).

On-site trees

We inventoried 60 trees with a diameter at standard height of six inches and greater. Specific details about each on-site tree, including size and health condition, are listed in the attached tree inventory Table of Trees.

Two of the inventoried trees, 443 and 445, are windmill palms (*Trachycarpus fortunei*) and not a regulated species. Two trees are not viable due to poor health and are proposed for removal. These include Tree 409, a corkscrew willow (*Salix matsudana* 'Tortulosa') and Tree 433, a paper birch (*Betula papyrifera*) tree. All four trees are proposed for removal.

Six of the remaining 56 private property trees meet the exceptional tree criteria as outlined in the Seattle Director's Rule 16-2008,³ which include trees: 432, 434, 452, 453, 456, and 457. Three of these (453, 456, and 457) are located on or near a Steep Slope ECA along the south property line.

Tree Retention and Protection

The site contains 56 viable regulated trees. Thirty-eight regulated trees (68 percent) are proposed for retention. All retained trees should be protected following the tree protection specifications outlined in Appendix B. Tree protection specifications should be included in the project manual and on the plan set and included with Section 01 56 39 Tree and Plant Protection and Salvage project requirements.

Work within the dripline of retained trees should be carefully planned with the project arborist. Areas where alternative construction methods are planned should be called out on the plan set. Tree protection specifications include but are not limited to the following:

- Install 6-foot chain-link fencing at the dripline of the tree unless otherwise specified.
- Install fencing prior to demolition except in areas where existing infrastructure within a tree's driplines is proposed for demolition
- Move fencing only when work specified within the tree protection area is planned to occur under the observation of the project arborist. This will prevent damage to trees from the use of unplanned construction methods within the tree protection area.
- Apply 6-inches of coarse woodchip mulch within the tree protection area to protect soils. We recommend applying woodchip mulch prior to the commencement of construction.
- Install temporary irrigation to water trees during construction.
- Use alternative excavation methods such as pneumatic air excavation or hand digging within the dripline of trees when appropriate.
- Have the project arborist monitor all soil disturbance activities including demolition and grading within the tree protection area (see Photo 1).
 - Trees that will specifically require arborist monitoring include: 413, 418, 430, 431, 434, 435, 441, 447, 448, and each exceptional tree.

Tree 426 is a Mugo pine (*Pinus mugo*) tree that has an unusual structure (see Photo 2). The tree presents a low risk. The structure should be supported with a prop placed on the underside of the trunk to prevent a possible failure.

³ Sugimura, D.W. "DPD Director's Rule 16-2008". Seattle, WA, 2009

Five of the six exceptional trees will be retained and protected (see Photo 3). According to SMC 25.11.50⁴ work within the dripline of exceptional trees can only impact one-third of the outer one-half of the dripline area. The total area of disturbance within the outer dripline area should be calculated for each exceptional tree and shown on the plans.

We were asked to provide exploratory air excavation work 30 feet to the west of tree 456 and 35 feet to the southeast of tree 457 to ascertain whether structural roots are present in the upper soil profile.⁵ We found a low density of roots, 2-inches in diameter and smaller, near the dripline of each tree. We determined that any development proposed for this area would not significantly impact either tree.

We also evaluated potential negative impacts to Tree 457 from the excavation necessary for the installation of the new building foundation (see Photo 4). It is Tree Solutions' opinion that the building could be constructed with minimal negative impacts to the tree roots as long as over-excavation is kept to a minimum. If additional construction is planned beyond the proposed footprint, further evaluation will be needed.

An additional concern for all three of the exceptional trees along the southern border is the removal of asphalt and repaving within the dripline of each tree. The pavement over the roots should be left in place for as long as possible as a layer of protection for the roots. An arborist should be available to monitor the removal of asphalt and provide guidance to protect roots from damage. Roots can also be evaluated for potential negative impacts from repaving at this time. Once the pavement is removed tree protection should be installed.

Pruning

We assessed the pruning needs of the trees proposed for retention. Trees requiring pruning work to reduce the likelihood of part failure and ensure safety include: 411, 413, 414, 432, 442, 447, 453, 456, and 457. Specific pruning needs are identified in the Table of Trees.

All three of the exceptional trees along the southern border require clearance pruning for the vehicles that will move below the canopy. In addition, tree 457 will require clearance pruning from the building corner to accommodate construction. The canopy will need to be raised on the south and west sides to improve views from the school campus. Pruning work is to be done according to applicable ANSI A300 standards and the International Society of Arboriculture's Best Management Practices for tree preservation during construction. No cuts greater than 3 inches diameter should be necessary to raise the crown.

Tree Removal

Eighteen trees (32 percent) are proposed for removal. Reasons for removal include poor structure, poor species selection, and/or trees will be compromised by construction and will not remain viable following construction.

⁴ Seattle Municipal Code 25.11.050. General Provisions for Exceptional Trees

⁵ Tree Solutions Inc. Air Excavation Memo (dated 11.29.2021); attached with report

One exceptional tree, Tree 452, is centrally located on the site within the main buildable area (Photo 5). We evaluated the potential for transplanting the tree and determined it was not feasible. The tree is proposed for removal and replacement.

Tree Replacement

Tree Solutions recommends a replacement rate of 1:1 for regulated tree removal outside of the ECA. The mature canopy spread of the replacement trees should meet or exceed the canopy removed from the site. Trees that are removed within an ECA are subject to replacement requirements as outlined in SMC 25.09.070.⁶ Replacement of exceptional trees and trees greater than 24-inches DSH are subject to requirements as outlined in SMC 25.11.090.⁷

Off-site trees

We inventoried 48 off-site trees. Off-site trees were inventoried only if their canopies extended over school district property. These adjacent trees are labeled alphabetically A through AV, with the "A" prefix assigned to trees inventoried after A-Z had been assigned to adjacent trees. Trees shown on the survey in this location that were not assigned alphabetical identifiers do not overhang school district property or are below 6 inches in diameter.

The majority of off-site trees are located to the east of the property on property owned by the United States Department of Veterans Affairs. Roots from these trees clearly extend below the service road on the east perimeter of the subject property (see Photo 6). The pavement over the roots should be left in place for as long as possible as a layer of protection for the roots. An arborist should be available to monitor the removal of asphalt and provide guidance to protect roots from damage. Once the pavement is removed tree protection should be installed.

It is unclear if the curb along the roadway is proposed for retention or removal. If removed, care should be taken not to damage the structural roots that have grown up to and are pressing against the structure. Tree W will require special attention as the basal flare has lifted and cracked the curb. The basal flare is part of the trunk and should not be damaged.

Off-site trees should be provided protection at their dripline during both demolition and construction activities. The removal of pavement from over the root systems of adjacent site trees should be completed in a similar manner to protected trees on the subject property.

Risk Trees

Seven adjacent site trees AO, AP, AR, AS, AT, AU, and AV are all rated to be in poor structural condition (see Photo 7). All trees are rated as in poor health condition except tree AO, which is rated as fair health condition.

In our opinion, all assessed trees are in decline and have a probable likelihood of branch and stem failure in a 5-year time frame. Nearby targets for failing tree parts include existing school buildings, vehicles parked in the VA Hospital parking lot, and pedestrians and vehicles utilizing the Mercer Middle School access road on the eastern portion of the property.

⁶ Seattle Municipal Code 25.09.070 Standards for Trees and Vegetation in Critical Areas

⁷ Seattle Municipal Code 25.11.090 Tree replacement and site restoration

We recommend that all seven trees be considered for removal. Tree removals would need to be coordinated with the adjacent VA Hospital, which owns the land where the trees are located.

This removal work may also require a permit from SDCI, as the trees of concern may be located in a Steep Slope ECA. According to Seattle Municipal Code (SMC) Chapter 25.09.070 trees in steep slopes may be removed only if the tree is a “Hazard Tree” as defined by SMC Chapter 25.11. The code also requires that any removals be mitigated with vegetation and habitat restoration (SMC 25.09.070.G & H). Tree Solutions can assist with this permitting work upon request.

Overall Recommendations

- Site planning around exceptional trees must follow the guidelines outlined in SMC 25.11.050.⁸
- The total area of disturbance within the outer dripline area should be calculated for each exceptional tree.
- Site planning around trees in critical areas must follow the guidelines outlined in SMC 25.09.070.⁹
- All pruning should be conducted by an ISA certified arborist and following current ANSI A300 specifications.¹⁰
- Utilize a common tree layer across the plan set that shows tree numbers, identifiers, accurate driplines, exceptional status, and limits of disturbance. This is critical on civil drawings and any drawings that show excavation near trees.
 - Coordinate with Tree Solutions to plan excavation methods to be used within the driplines of retained trees.
 - Call out alternative construction methods within tree protection areas on plan sets.
- Produce an assessment of impacts within the dripline of all exceptional trees.
- Include tree protection specification language provided in Appendix B in all plan sets. Incorporate all provisions in the provided specifications into the formal tree protection specifications.
- Tree protection specifications should be included with those found in Section 015639 Tree and Plant Protection and Salvage project requirements.
- Plan for arborist monitoring of demolition, excavation activities, and any other soil disturbance within the tree protection area of any protected tree.
 - Work within the driplines of trees 453, 456, and 457 are priorities for arborist monitoring.
 - Monitoring of grading and construction work on the eastern portion of the site is also a priority, as roots from numerous adjacent site trees growing in the steep slope ECA may be negatively impacted.
- Avoid trenching for irrigation within the dripline of retained trees.
- Implement temporary irrigation for all retained trees on-site throughout the dry season: May through September.

⁸ Seattle Municipal Code 25.11.050. General Provisions for Exceptional Trees

⁹ Seattle Municipal Code 25.09.070 Standards for Trees and Vegetation in Critical Areas

¹⁰ ANSI A300 (Part 1) – 2017 American National Standards Institute. American National Standard for Tree Care Operations: Tree, Shrub, and Other Woody Plant Maintenance: Standard Practices (Pruning). New York: Tree Care Industry Association, 2017.

- Utilize small plant stock (maximum 1 to 2-gallon size) for installation within the tree protection area of retained trees. Install plants within driplines of retained trees by hand.

Appendix A – Photographs



Photo 1. View looking to the east at tree 418. The red arrows point to a root that extends from the tree and below the pavement. An arborist should be on site to monitor the removal of the pavement to ensure the tree does not become unnecessarily damaged.



Photo 2. View looking to the south at Tree 426. A prop (red "L") should be added below the trunk to reduce the likelihood of failure.



Photo 3. A view of exceptional atlas cedar tree 453. Note that the dripline of the tree extends substantially over the paved parking area. For this and all exceptional trees, all work below the dripline will need to be monitored by the project arborist. The lower canopy of this tree and Trees 456 and 457 will need to be raised to allow for appropriate clearance below.



Photo 4. A view of tree 457 and the marked location of the proposed new building corner.



Photo 5. View looking west at the exceptional Saucer magnolia Tree 452, which is proposed for removal. The tree has numerous pruning cuts throughout all of the trunks. The canopy of the tree is low growing with a significant spread.



Photo 6. A view of the access road along the eastern edge of the property with roots growing under this road. Measures must be taken to protect the adjacent site trees by limiting root disturbance and damage. This is especially true if the existing curb on the left-hand side of the photo is proposed to be removed and replaced.



Photo 7. A view of trees AS through AV, which are nearly dead Lombardy poplars that pose a potential risk to school buildings and vehicles parked in the adjacent VA Hospital parking lot.

Appendix B – Tree Protection Specifications*

1. **Project Arborist:** The project arborists shall at minimum have an International Society of Arboriculture (ISA) Certification and ISA Tree Risk Assessment Qualification.
2. **Tree Protection Area (TPA):** The city of Seattle requires a tree protection area (TPA) of the dripline of the tree. In some cases, the TPA may extend outside tree protection fencing. Work within the TPA must be approved and monitored by the project arborist.
3. **Tree Protection Fencing:** Tree protection shall consist of 6-foot chain-link fencing installed at the TPA or at the limits of disturbance as approved by the project arborist. Fence posts shall be anchored into the ground or bolted to existing hardscape surfaces. Where trees are being retained as a group the fencing shall encompass the entire area including all landscape beds or lawn areas associated with the grove that are not needed for construction access or staging. Where chain link fencing is installed at the limits of disturbance to accommodate future project work, high visibility fencing will be placed at the TPA with signage indicating that work in the TPA shall be monitored by the project arborist and permission from the site manager is required for entry. Where trees are protected at the edge of the project boundary, construction limits fencing shall be incorporated as the boundary of tree protection fencing. Where tree protection will be placed at the top of a rockery, high visibility fencing shall be used.
4. **Access Beyond Tree Protection Fencing:** In areas where work such as installation of utilities is required within the TPA, a locking gate will be installed in the fencing to facilitate access. The project manager or project arborist shall be present when tree protection areas are accessed.
5. **Tree Protection Signage:** Tree protection signage shall be affixed to fencing every 20 feet. Signage shall be fluorescent, at least 2' x 2' in size, with 3" tall text. Signage will note: "Tree Protection Area – Do Not Enter: Entry into the tree protection area is prohibited unless authorized by the project manager." Signage shall include the contact information for the project manager and instructions for gaining access to the area.
6. **Filter Fencing:** Filter fencing within the TPA of retained trees shall be installed in a manner that does not sever roots. Do not trench to insert fabric into the ground. Install so that filter fabric sits on the ground and is weighed in place by sandbags or gravel.
7. **Monitoring:** The project arborist shall monitor all ground disturbance at the edge of or within the TPA, including where the TPA extends beyond the tree protection fencing.
8. **Soil Protection:** No parking, foot traffic, materials storage, or dumping (including excavated soils) are allowed within the TPA. Heavy machinery shall remain outside of the TPA. Access to the tree protection area will be granted under the supervision of the project arborist. If project arborist allows, heavy machinery can enter the area if soils are protected from the load. Acceptable methods of soil protection include applying 3/4-inch plywood over 4 to 6 inches of wood chip mulch or use of Alturna mats (or equivalent product approved by the project arborist). Retain existing paved surfaces within or at the edge of the TPA for as long as possible.
9. **Soil Remediation:** Soil compacted within the TPA of retained trees shall be remediated using pneumatic air excavation according to a specification produced by the project arborist.
10. **Canopy Protection:** Where fencing is installed at the limits of disturbance within the TPA, canopy management (pruning or tying back) shall be conducted to ensure that vehicular traffic does not damage canopy parts. Exhaust from machinery shall be located five feet outside the dripline of retained trees. No exhaust shall encounter foliage for prolonged periods of time.
11. **Duff/Mulch:** Apply 4 to 6 inches of arborist wood chip mulch or hog fuel over bare soil within the TPA to prevent compaction and evaporation. Keep mulch 1 foot away from the base of trees and 6

inches from retained understory vegetation. Retain and protect as much of the existing duff and understory vegetation as possible.

12. **Excavation:** Excavation done at the edge of or within the TPA shall use alternative methods such as pneumatic air excavation or hand digging. If heavy machinery is used, use flat front buckets with the project arborist spotting for roots. When roots are encountered, stop excavation, and cleanly sever roots. The project arborist shall monitor all excavation done within the TPA.
13. **Fill:** Limit fill to 1 foot of un-compacted well-draining soil, within the TPA of retained trees. In areas where additional fill is required, consult with the project arborist. Fill must be kept at least 1 foot from the trunks of trees.
14. **Root Pruning:** Limit root pruning to the extent possible. All roots shall be pruned with a sharp saw making clean cuts. Do not fracture or break roots with excavation equipment.
15. **Root Moisture:** Root cuts and exposed roots shall be immediately covered with soil, mulch, or clear visqueen and kept moist. Water to maintain moist condition until the area is back filled. Do not allow exposed roots to dry out before replacing permanent backfill.
16. **Hardscape Removal:** Retain hardscape surfaces for as long as practical. Remove hardscape in a manner that does not require machinery to traverse newly exposed soil within the TPA. Where equipment must traverse the newly exposed soil, apply soil protection as described in section 8. Replace fencing at the edge of TPA if soil exposed by hardscape removal will remain for any period of time.
17. **Tree Removal:** All trees to be removed that are located within the TPA of retained trees shall not be ripped, pulled, or pushed over. The tree should be cut to the base and the stump either left or ground out. A flat front bucket can also be used to sever roots around all sides of the stump, or the roots can be exposed using hydro or air excavation and then cut before removing the stump.
18. **Irrigation:** Retained trees with soil disturbance within the TPA will require supplemental water from June through September. Acceptable methods of irrigation include drip, sprinkler, or watering truck. Trees shall be watered three times per month during this time.
19. **Pruning:** Pruning required for construction and safety clearance shall be done with a pruning specification provided by the project arborist in accordance with American National Standards Institute ANSI-A300 2017 Standard Practices for Pruning. Pruning shall be conducted or monitored by an arborist with an ISA Certification.
20. **Plan Updates:** All plan updates or field modifications that result in impacts within the TPA or change the retained status of trees shall be reviewed by the senior project manager and project arborist prior to conducting the work.
21. **Materials:** Contractor shall have the following materials onsite and available for use during work in the TPA:
 - Sharp and clean bypass hand pruners
 - Sharp and clean bypass loppers
 - Sharp hand-held root saw
 - Reciprocating saw with new blades
 - Shovels
 - Trowels
 - Clear visqueen
 - Burlap
 - Water

* This specification should be used in conjunction with Section 01 56 39 Tree and Plant Protection and Salvage project requirements. Actions and materials that provide the greatest level of protection for the tree should be implemented.

Appendix C - Assumptions & Limiting Conditions

1. Consultant assumes that the Site and its use do not violate, and is following all applicable codes, ordinances, statutes, or regulations.
2. The Consultant may provide a report or recommendation based on published municipal regulations. The Consultant assumes that the municipal regulations published on the date of the report are current municipal regulations and assumes no obligation related to unpublished city regulation information.
3. Any report by Consultant and any values expressed therein represent the opinion of the Consultant, and the Consultant's fee is in no way contingent upon the reporting of a specific value, a stipulated result, the occurrence of a subsequent event, or upon any finding to be reported.
4. All photographs included in our reports were taken by Tree Solutions, Inc. during the documented Site visit, unless otherwise noted. Sketches, drawings, and photographs in any report by Consultant, being intended as visual aids, are not necessarily to scale and should not be construed as engineering or architectural reports or surveys. The reproduction of any information generated by architects, engineers or other consultants and any sketches, drawings or photographs is for the express purpose of coordination and ease of reference only. Inclusion of such information on any drawings or other documents does not constitute a representation by Consultant as to the sufficiency or accuracy of the information.
5. Unless otherwise agreed, (1) information contained in any report by Consultant covers only the items examined and reflects the condition of those items at the time of inspection; and (2) the inspection is limited to visual examination of accessible items without dissection, excavation, probing, climbing, or coring.
6. These findings are based on the observations and opinions of the authoring arborist, and does not provide guarantees regarding the future performance, health, vigor, structural stability, or safety of the plants described assessed.
7. Measurements are subject to typical margins of error, considering the oval or asymmetrical cross-section of most trunks and canopies.
8. Tree Solutions did not review any reports or perform any tests related to the soil located on the subject property unless outlined in the scope of services. Tree Solutions staff are not and do not claim to be soils experts. An independent inventory and evaluation of the site's soil should be obtained by a qualified professional if an additional understanding of the site's characteristics is needed to make an informed decision.
9. Our assessments are made in conformity with acceptable evaluation/diagnostic reporting techniques and procedures, as recommended by the International Society of Arboriculture.



Table of Trees
1600 S. Columbian Way
Seattle WA 98108

Arborist: SD/JH
Date of Inventory: 07.14.2021
Table Prepared: 07.16.2021

DSH (Diameter at Standard Height) is measured 4.5 feet above grade, or as specified in the *Guide for Plant Appraisal, 10th Edition*, published by the Council of Tree and Landscape Appraisers.

DSH for multi-stem trees are noted as a single stem equivalent, which is calculated using the method defined in the *Director's Rule 16-2008*.

Letters are used to identify trees on neighboring properties with overhanging canopies.

Dripline is measured from the center of the tree to the outermost extent of the canopy.

Tree ID	Code	Scientific Name	Common Name	DSH (inches)	DSH Multistem	Health Condition	Structural Condition	Dripline Radius (feet)				Dripline Radius Input				Exceptional Threshold	Exceptional by Size	Exceptional Grove	Proposed Action	Notes	Recommendations
								N	E	S	W	N	E	S	W						
402	PONI	<i>Populus nigra 'Italica'</i>	Lombardy poplar	20.7	8.5, 4.5, 9.5, 12.9, 8.8	Good	Fair	9.9	9.9	9.9	9.9	9.0	9.0	9.0	9.0	30.0	-	No	?	surface root damage, included stem unions at base	-
403	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	11.3	7.9, 6.7, 4.6	Good	Fair	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	30.0	-	No	?	included codominant stem unions at base	-
404	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	11.6	9.4,6.8	Good	Fair	7.5	7.5	7.5	7.5	7.0	7.0	7.0	7.0	30.0	-	No	?	included codominant stem unions at base	-
405	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	8.1	6.6,2,4.3	Good	Fair	5.3	5.3	5.3	5.3	5.0	5.0	5.0	5.0	30.0	-	No	?	included codominant stem unions at base	-
406	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	25.3	18.6,17.1	Good	Fair	14.6	14.1	14.1	14.1	13.5	13.0	13.0	13.0	30.0	-	No	?	surface roots with sprouts, included codominant stem unions at base	-
407	frox	<i>Fraxinus oxycarpa</i>	Raywood Ash	21.0		Good	Good	19.4	0.9	0.9	0.9	18.5				24.0	-	No	?	minor canopy dieback, ivy on trunk	Remove ivy from trunk
408	sama	<i>Salix matsudana 'Tortuosa'</i>	Corkscrew willow	12.0		Fair	Fair	6.5	7.5	9.5	21.5	6.0	7.0	9.0	21.0	24.0	-	No	?	asymetric to east, dieback in crown, suppressed	-
409	sama	<i>Salix matsudana 'Tortuosa'</i>	Corkscrew willow	8.0		Poor	Poor	0.3	5.3	0.3	0.3	0.0	5.0	0.0	0.0	24.0	-	No	?	nearly dead, fungal decay fruiting bodies present, not onnsurvey	Consider removal
410	acpl	<i>Acer platanoides</i>	Norway maple	18.6		Good	Good	20.8	20.8	25.8	19.8	20.0	20.0	25.0	19.0	30.0	-	No	?	codominant with stable union	-
411	sama	<i>Salix matsudana 'Tortuosa'</i>	Corkscrew willow	17.0		Fair	Fair	7.7	8.7	15.7	19.7	7.0	8.0	15.0	19.0	24.0	-	No	?	asymetric canopy, significant canopy dieback	-
412	frox	<i>Fraxinus oxycarpa</i>	Raywood Ash	17.0		Good	Fair	0.7	0.7	0.7	23.7				23.0	24.0	-	No	?	minor canopy dieback, ivy on trunk	Remove ivy from trunk
413	frox	<i>Fraxinus oxycarpa</i>	Raywood Ash	16.0		Fair	Fair	9.7	9.7	13.7	13.7	9.0	9.0	13.0	13.0	24.0	-	No	?	significant canopy dieback, ivy on trunk	Remove ivy from trunk
414	frox	<i>Fraxinus oxycarpa</i>	Raywood Ash	20.0		Fair	Fair	16.8	14.8	20.8	21.8	16.0	14.0	20.0	21.0	24.0	-	No	?	dieback in the canopy, foliage overhangs portable, ivy on trunk	Remove ivy from trunk
415	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	21.0		Good	Good	10.9	10.9	10.9	10.9	10.0	10.0	10.0	10.0	30.0	-	No	?	-	-
416	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	27.0		Good	Good	13.1	13.1	13.1	13.1	12.0	12.0	12.0	12.0	30.0	-	No	?	-	-
417	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	24.0		Good	Good	15.0	15.0	15.0	15.0	14.0	14.0	14.0	14.0	30.0	-	No	?	-	-
418	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	25.5	8,12,21	Good	Good	17.1	17.1	17.1	17.1	16.0	16.0	16.0	16.0	30.0	-	No	?	roots extend under handscape 26 feet from trunk	Protect roots under handscape during construction if tree is retained
419	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	15.5		Good	Good	16.6	16.6	16.6	16.6	16.0	16.0	16.0	16.0	30.0	-	No	?	-	-
420	thpl	<i>Thuja plicata</i>	Western Redcedar	6.0		Fair	Fair	7.3	7.3	7.3	7.3	7.0	7.0	7.0	7.0	30.0	-	No	?	bark sloughing, insect holes present, slightly sparse canopy	-
421	pije	<i>Pinus jeffreyi</i>	Jeffrey pine	13.0		Good	Good	9.5	9.5	9.5	9.5	9.0	9.0	9.0	9.0	30.0	-	No	?	-	-
422	pije	<i>Pinus jeffreyi</i>	Jeffrey pine	12.7		Good	Good	9.5	9.5	9.5	9.5	9.0	9.0	9.0	9.0	30.0	-	No	?	-	-
423	crja	<i>Cryptomeria japonica</i>	Japanese cedar	8.3		Good	Good	8.3	8.3	8.3	8.3	8.0	8.0	8.0	8.0	27.5	-	No	?	ivy in dripline	Remove ivy from dripline
424	PIGLa	<i>Picea glauca</i>	White spruce	7.1		Good	Good	4.3	4.3	4.3	4.3	4.0	4.0	4.0	4.0	30.0	-	No	?	dwarf variety 'Conica'	-
425	bepa	<i>Betula papyrifera</i>	Paper Birch	7.6	5.5,5.3	Good	Good	6.3	15.3	20.3	15.3	6.0	15.0	20.0	15.0	20.0	-	No	?	-	Monitor for bronze birch borer
426	pimu	<i>Pinus mugo</i>	Mugo pine	7.1		Good	Good	10.8	18.3	5.3	7.3	10.5	18.0	5.0	7.0	17.2	-	No	?	tearout near base, torsional in lowest scaffold extending east, could be propped to manage structure	Prop tree to manage structure and prevent future failures if retained
427	chpi	<i>Chamaecyparis pisifera</i>	Sawara cypress	9.1	6, 6.8	Good	Good	7.4	7.4	7.4	7.4	7.0	7.0	7.0	7.0	26.9	-	No	?	codominant at base	-

Table of Trees
1600 S. Columbian Way
Seattle WA 98108

Arborist: SD/JH _____
Date of Inventory: 07.14.2021
Table Prepared: 07.16.2021

Tree ID	Code	Scientific Name	Common Name	DSH (inches)	DSH Multistem	Health Condition	Structural Condition	N	E	S	W	N	E	S	W	Exceptional Threshold	Exceptional by Size	Exceptional Grove	Proposed Action	Notes	Recommendations
428	crja	<i>Cryptomeria japonica</i>	Japanese cedar	9.9		Good	Good	9.4	9.4	10.4	10.4	9.0	9.0	10.0	10.0	27.5	-	No	?	-	-
429	bepa	<i>Betula papyrifera</i>	Paper Birch	7.5		Good	Good	8.3	11.3	13.3	9.3	8.0	11.0	13.0	9.0	20.0	-	No	?	-	Monitor for bronze birch borer
430	quro	<i>Quercus robur</i>	English oak	22.3		Good	Good	16.9	0.9	21.9	26.9	16.0		21.0	26.0	30.0	-	No	?	minor interior dieback, 4 feet from concrete stairs	-
431	pigla	<i>Picea glauca</i>	White spruce	13.3		Good	Good	10.6	14.6	10.6	9.6	10.0	14.0	10.0	9.0	30.0	-	No	?	Check exceptional size - wound at base with good response growth, 6.5 feet from concrete path to west	-
432	acci	<i>Acer circinatum</i>	Vine Maple	11.0	6,6,7	Fair	Fair	16.5	13.5	11.5	15.5	16.0	13.0	11.0	15.0	8.0	Exceptional	No	?	significant canopy dieback	-
433	bepa	<i>Betula papyrifera</i>	Paper Birch	8.0		Poor	Poor	3.3	3.3	8.3	3.3	3.0	3.0	8.0	3.0	20.0	-	No	?	majority of canopy has died, in decline	Consider removal
434	acci	<i>Acer circinatum</i>	Vine Maple	15.4	5.5,5.9,5.7, 4.8,6.2,6.1	Good	Good	16.6	16.6	13.6	15.6	16.0	16.0	13.0	15.0	8.0	Exceptional	No	?	minor canopy dieback, 4 feet from sidewalk to north	-
435	bepe	<i>Betula pendula</i>	European White Birch	23.5	14, 11.5, 15	Good	Good	16.0	22.0	20.0	19.0	15.0	21.0	19.0	18.0	24.0	-	No	?	nearly at exceptional threshold, trunk 2.5 feet from path to south, 9 feet from building	Monitor for bronze birch borer, confirm tree has not grown and exceeded exceptional threshold if proposed for removal
436	pije	<i>Pinus jeffreyi</i>	Jeffrey pine	6.7		Good	Good	7.3	7.3	7.3	7.3	7.0	7.0	7.0	7.0	30.0	-	No	?	-	-
437	pije	<i>Pinus jeffreyi</i>	Jeffrey pine	9.9		Good	Good	9.4	9.4	9.4	9.4	9.0	9.0	9.0	9.0	30.0	-	No	?	-	-
438	pini	<i>Pinus nigra</i>	Austrian Black Pine	11.6		Good	Good	9.5	9.5	9.5	9.5	9.0	9.0	9.0	9.0	24.0	-	No	?	-	-
439	thpl	<i>Thuja plicata</i>	Western Redcedar	9.2	8,4.5	Good	Good	11.4	11.4	11.4	11.4	11.0	11.0	11.0	11.0	30.0	-	No	?	-	-
440	pije	<i>Pinus jeffreyi</i>	Jeffrey pine	11.7		Good	Good	9.5	9.5	9.5	9.5	9.0	9.0	9.0	9.0	30.0	-	No	?	-	-
441	pije	<i>Pinus jeffreyi</i>	Jeffrey pine	11.0		Good	Good	9.5	9.5	9.5	9.5	9.0	9.0	9.0	9.0	30.0	-	No	?	-	-
442	pipu	<i>Picea pungens</i>	Colorado spruce	9.6		Good	Fair	8.4	8.4	8.4	8.4	8.0	8.0	8.0	8.0	23.1	-	No	?	previous top failure with reiterated leaders, may be structural issue in future as tree grows	Consider structural pruning. Tree Solutions can produce pruning specification upon request
443	trfo	<i>Trachycarpus fortunei</i>	Windmill palm	9.3		Good	Good	6.4	6.4	6.4	6.4	6.0	6.0	6.0	6.0	Cannot be exceptional	-	No	?	windmill palm, does not meet biological definition of a tree, 3 feet from building	-
444	arun	<i>Arbutus unedo</i>	Strawberry tree	10.0		Good	Good	4.4	9.4	9.4	9.4	4.0	9.0	9.0	9.0	10.2	-	No	?	-	-
445	trfo	<i>Trachycarpus fortunei</i>	Windmill palm	9.5		Good	Good	6.4	6.4	6.4	6.4	6.0	6.0	6.0	6.0	Cannot be exceptional	-	No	?	windmill palm, does not meet biological definition of a tree, 3 feet from building	-
446	arun	<i>Arbutus unedo</i>	Strawberry tree	9.3	6.1, 7	Good	Good	4.4	8.4	8.4	8.4	4.0	8.0	8.0	8.0	10.2	-	No	?	-	-
447	pimu	<i>Pinus mugo</i>	Mugo pine	10.6	7.6,7.4	Fair	Fair	9.4	14.4	17.4	11.4	9.0	14.0	17.0	11.0	17.2	-	No	?	numerous galls on branches, canopy dieback	-
448	pide	<i>Pinus densiflora</i>	Japanese red pine	18.4	8.4, 11.3, 11.9			12.8	15.8	18.8	15.8	12.0	15.0	18.0	15.0	20.0	-	No	?	flush cuts with response growth, heavy cone crop, growing in small pot near building and concrete paths	-
449	acpa	<i>Acer palmatum</i>	Japanese Maple	6.8		Good	Good	7.3	7.3	7.3	7.3	7.0	7.0	7.0	7.0	12.0	-	No	?	-	-
450	arun	<i>Arbutus unedo</i>	Strawberry tree	8.8		Good	Good	7.4	4.4	8.4	9.4	7.0	4.0	8.0	9.0	10.2	-	No	?	pruning wounds on lower trunk, growing in limited soil volumes	-
451	arun	<i>Arbutus unedo</i>	Strawberry tree	10.0		Good	Fair	7.4	4.4	7.4	8.4	7.0	4.0	7.0	8.0	10.2	-	No	?	growing in limited soil volume	-

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Tree ID	Code	Scientific Name	Common Name	DSH (inches)	DSH Multistem	Health Condition	Structural Condition	N	E	S	W	N	E	S	W	Exceptional Threshold	Exceptional by Size	Exceptional Grove	Proposed Action	Notes	Recommendations
452	maso	<i>Magnolia x soulangiana</i>	<i>Saucer magnolia</i>	19.0	9.4,10.1,8,10.4	Good	Fair	19.8	16.8	16.8	17.8	19.0	16.0	16.0	17.0	16.0	Exceptional	No	?	numerous wounds on lower trunk and scaffold branches with good response growth. Tree displays good vigor despite these defects	-
453	ceat	<i>Cedrus atlantica</i>	<i>Atlas Cedar</i>	42.5				31.8	32.8	30.8	30.8	30.0	31.0	29.0	29.0	30.0	Exceptional	No	?	codominant with narrow union at 6 feet, minor needle fungus issues, roots beneath asphalt to north, any work within dripline should be monitored, tree appears to have never been structurally pruned, recommend pruning for street clearance and structural stability	Prune tree for street clearance and for structural stability by subordinating codominant stems. Tree Solutions can create pruning specification upon request
454	thpl	<i>Thuja plicata</i>	<i>Western Redcedar</i>	9.0		Good	Good	9.4	9.4	9.4	9.4	9.0	9.0	9.0	9.0	30.0	-	No	?	-	-
455	acpa	<i>Acer palmatum</i>	<i>Japanese Maple</i>	6.3		Good	Good	9.3	9.3	9.3	9.3	9.0	9.0	9.0	9.0	12.0	-	No	?	not on survey	-
456	ceat	<i>Cedrus atlantica</i>	<i>Atlas Cedar</i>	48.7	41.5,25.5	Good	Good	22.0	22.0	28.0	28.0	20.0	20.0	26.0	26.0	30.0	Exceptional	No	?	codominant at base with wide strong attachment angle, partially girdling root on south side, cracked broken and hanging branches on north side, recommend crown cleaning, roots under asphalt parking lot to north	Prune tree for street clearance and crown clean to remove stub cuts and torn branches. Tree Solutions can create pruning specification upon request
457	ceat	<i>Cedrus atlantica</i>	<i>Atlas Cedar</i>	38.0		Good	Good	28.6	27.6	26.6	26.6	27.0	26.0	25.0	25.0	30.0	Exceptional	No	?	good branch structure, ivy in dripline, codominant stem in canopy on sw side	Prune tree for street clearance and for structural stability by subordinating codominant stems. Tree Solutions can create pruning specification upon request
458	pimu	<i>Pinus mugo</i>	<i>Mugo pine</i>	6.1		Good	Good	8.3	6.3	8.3	8.3	8.0	6.0	8.0	8.0	17.2	-	No	?	-	-
459	quru	<i>Quercus rubra</i>	<i>Red Oak</i>	20.8				0.9	26.9	25.9	26.9		26.0	25.0	26.0	30.0	-	No	?	-	-
460	bepa	<i>Betula papyrifera</i>	<i>Paper Birch</i>	9.3	6.6,6.5	Good	Good	11.4	12.4	14.4	11.4	11.0	12.0	14.0	11.0	20.0	-	No	?	no signs of bronze birch borer	Monitor for bronze birch borer
461	bepa	<i>Betula papyrifera</i>	<i>Paper Birch</i>	7.9	4.1,5,4.5	Good	Good	13.3	12.3	11.3	12.3	13.0	12.0	11.0	12.0	20.0	-	No	?	no signs of bronze birch borer	Monitor for bronze birch borer
Adjacent Site Trees																					
A	fran	<i>Fraxinus angustifolia</i> 'Flame'	<i>Narrow leafed ash</i>	19.3		Good	Good	17.3	17.8	27.8	23.3	16.5	17.0	27.0	22.5	24.0	-	No	?	dieback of interior branches to 2.5 inch diameter, looks good overall	-
B	fran	<i>Fraxinus angustifolia</i> 'Flame'	<i>Narrow leafed ash</i>	12.3		Good	Fair	12.5	16.5	18.5	12.5	12.0	16.0	18.0	12.0	24.0	-	No	?	wounds with response growth on lower trunk	-
C	pyca	<i>Pyrus calleryana</i>	<i>Callery Pear</i>	7.3		Fair	Fair	8.3	7.3	6.3	6.3	8.0	7.0	6.0	6.0	13.0	-	No	?	large wound from tearout on trunk, foliar rust fungus present	-
D	prem	<i>Prunus emarginata</i> var. <i>mollis</i>	<i>Bitter cherry</i>	12.0		Good	Good	0.5	0.5	0.5	15.5				15.0	Not Exceptional except in arave	-	No	?	near chainlink fence	-
E	poni	<i>Populus nigra</i> 'Italica'	<i>Lombardy poplar</i>	28.0		Good	Good	1.2	1.2	1.2	13.2				12.0	30.0	-	No	?	ivy on trunk	Remove ivy from trunk

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F	poni	<i>Populus nigra 'Italica'</i>	Lombardy poplar	33.4	15,23,12,9,6,10	Good	Fair	1.4	1.4	1.4	12.4				11.0	30.0	Exceptional	No	?	shown as 2 trees on survey, multiple stems at base, significant ivy on trunk	Remove ivy from trunk
G	soau	<i>Sorbus aucuparia</i>	Mountain-Ash	8.9	6,5,3,3	Good	Good	0.4	0.4	0.4	9.4				9.0	29.0	-	No	?	growing into fence, not on survey	
H	pyca	<i>Pyrus calleryana</i>	Callery Pear	11.0		Fair	Poor	0.5	0.5	0.5	9.5				9.0	13.0	-	No	?	canopy heavily suppressed by ivy, not on survey, trunk within 1 foot of fence	Remove ivy from trunk
I	potr	<i>Populus trichocarpa</i>	Black cottonwood	17.9	16,8	Good	Fair	0.7	0.7	0.7	12.7				12.0	Not Exceptional except in grove	-	No	?	-	-
J	psme	<i>Pseudotsuga menziesii</i>	Douglas-fir	9.0		Good	Good	0.4	0.4	0.4	13.4				13.0	30.0	-	No	?	slightly sparse canopy	-
K	alru	<i>Alnus rubra</i>	Red alder	12.0		Fair	Fair	0.5	0.5	0.5	20.5				20.0	Not Exceptional unless in grove	-	No	?	near fence, lost top in past	-
L	potr	<i>Populus trichocarpa</i>	Black cottonwood	25.0		Good	Good	1.0	1.0	1.0	21.0				20.0	Not Exceptional except in grove	-	No	?	large structural root enveloping curb, curb should be limits of disturbance	-
M	alru	<i>Alnus rubra</i>	Red alder	19.1	10,11,12	Good	Good	0.8	0.8	0.8	19.8				19.0	Not Exceptional unless in grove	-	No	?	all trunks envelop the fence, surface roots about curb to west, curb 2.5 feet from trunk	-
N	psme	<i>Pseudotsuga menziesii</i>	Douglas-fir	17.0		Good	Good	0.7	0.7	0.7	13.7				13.0	30.0	-	No	?	significant ivy suppressing upper canopy	Remove ivy from trunk
O	quru	<i>Quercus rubra</i>	Red Oak	11.0		Good	Good	0.5	0.5	0.5	13.5				13.0	30.0	-	No	?	not on survey, trunk enveloping fence, 2 feet from curb	-
P	cede	<i>Cedrus deodara</i>	Deodar Cedar	25.0		Good	Good	1.0	1.0	1.0	25.0				24.0	30.0	-	No	?	ivy in canopy to 25 feet	Remove ivy from trunk
Q	psme	<i>Pseudotsuga menziesii</i>	Douglas-fir	22.0		Good	Good	0.9	0.9	0.9	22.9				22.0	30.0	-	No	?	ivy in canopy to 30 feet	Remove ivy from trunk
R	thpl	<i>Thuja plicata</i>	Western Redcedar	8.0		Good	Good	0.3	0.3	0.3	7.3				7.0	30.0	-	No	?	suppressed by ivy and nearby douglas-fir	Remove ivy from trunk
S	thpl	<i>Thuja plicata</i>	Western Redcedar	10.0		Fair	Fair	0.4	0.4	0.4	14.4				14.0	30.0	-	No	?	dead top likely from drought stress, heavy ivy on trunk	Remove ivy from trunk
T	thpl	<i>Thuja plicata</i>	Western Redcedar	8.0		Good	Good	0.3	0.3	0.3	6.3				6.0	30.0	-	No	?	-	-
U	thpl	<i>Thuja plicata</i>	Western Redcedar	9.8	6,5,6	Good	Good	0.4	0.4	0.4	10.9				10.5	30.0	-	No	?	tridominant at base, union looks solid	-
V	ACMA	<i>Acer macrophyllum</i>	Bigleaf Maple	6.0		Good	Good	0.3	0.3	0.3	13.3				13.0	30.0	-	No	?	Suppressed by adjacent cottonwood	-
W	potr	<i>Populus trichocarpa</i>	Black cottonwood	30.0		Good	Good	1.3	1.3	1.3	31.3				30.0	Not Exceptional except in grove	-	No	?	root flare has raised curb, structural roots under road causing cracking, retention may be difficult if road is repaved	Protect roots under hardscape during construction if tree is retained
X	psme	<i>Pseudotsuga menziesii</i>	Douglas-fir	9.0		Good	Good	0.4	0.4	0.4	11.4				11.0	30.0	-	No	?	stub cuts from crown raising, trunk 4 feet from curb, good candidate for retention	-
Y	psme	<i>Pseudotsuga menziesii</i>	Douglas-fir	10.0		Good	Good	0.4	0.4	0.4	12.4				12.0	30.0	-	No	?	-	-
Z	psme	<i>Pseudotsuga menziesii</i>	Douglas-fir	11.0		Good	Good	0.5	0.5	0.5	12.5				12.0	30.0	-	No	?	-	-
AA	PSME	<i>Pseudotsuga menziesii</i>	Douglas-fir	6.0		Good	Good	0.3	0.3	0.3	7.3				7.0	30.0	-	No	?	-	-
AB	PSME	<i>Pseudotsuga menziesii</i>	Douglas-fir	11.0		Good	Good	0.5	0.5	0.5	12.5				12.0	30.0	-	No	?	-	-
AC	THPL	<i>Thuja plicata</i>	Western Redcedar	6.0		Fair	Fair	0.3	0.3	0.3	9.3				9.0	30.0	-	No	?	Dead top, likely from drought stress	-
AD	THPL	<i>Thuja plicata</i>	Western Redcedar	6.0		Fair	Fair	0.3	0.3	0.3	9.3				9.0	30.0	-	No	?	Dead top, likely from drought stress	-

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AE	arme	<i>Arbutus menziesii</i>	<i>Madrone</i>	16.0		Good	Good	0.7	0.7	0.7	17.7				17.0	6.0	Exceptional	No	?	difficult to assess due to lack of access, tree exists	-
AF	thpl	<i>Thuja plicata</i>	<i>Western Redcedar</i>	7.0		Fair	Fair	0.3	0.3	0.3	9.3				9.0	30.0	-	No	?	-	-
AG	ARME	<i>Arbutus menziesii</i>	<i>Madrone</i>	14.4	12,8	Good	Good	0.6	0.6	0.6	21.6				21.0	6.0	Exceptional	No	?	-	-
AH	potr	<i>Populus trichocarpa</i>	<i>Black cottonwood</i>	16.0		Good	Good	0.7	0.7	0.7	14.7				14.0	Not Exceptional except in arave	-	No	?	heavy ivy on lower trunk limits assessment	Remove ivy from trunk
AI	POTR	<i>Populus trichocarpa</i>	<i>Black cottonwood</i>	16.0		Good	Good	0.7	0.7	0.7	13.7				13.0	Not Exceptional except in arave	-	No	?	ivy on trunk, trunk enveloping fence	Remove ivy from trunk
AJ	POTR	<i>Populus trichocarpa</i>	<i>Black cottonwood</i>	14.1	10,10	Good	Fair	0.6	0.6	0.6	12.6				12.0	Not Exceptional except in arave	-	No	?	codominant at base, eastern stem has dead top	-
AK	PSME	<i>Pseudotsuga menziesii</i>	<i>Douglas-fir</i>	10.0		Good	Good	0.4	0.4	0.4	12.4				12.0	30.0	-	No	?	minor needlecast on foliage, overall health good	-
AL	POTR	<i>Populus trichocarpa</i>	<i>Black cottonwood</i>	10.0		Good	Good	0.4	0.4	0.4	11.4				11.0	Not Exceptional except in arave	-	No	?	slightly suppressed from adjacent trees	-
AM	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	30.0		Good	Good	1.3	1.3	1.3	21.3				20.0	30.0	Exceptional	No	?	trunk significantly impacting fence and curb, heavy ivy to 45 feet, ivy limits structural assessment, bark sloughing and dieback to 3 inches diameter in canopy	Remove ivy from trunk
An	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	31.2	18,18,18	Good	Good	1.3	1.3	1.3	18.3				17.0	30.0	Exceptional	No	?	cluster of 3 trees growing as single unit, construction disturbance from adjacent property	-
AO	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	0.0		Fair	Poor	0.0	0.0	0.0	14.5				14.5	30.0	-	No	?	central leader dead, root damage probable, fill material in root zone	Consider removal
Ap	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	18.0		Poor	Poor	0.8	3.8	0.8	0.8		3.0			30.0	-	No	?	tree is nearly dead, fill in root zone	Consider removal
AQ	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	26.0		Good	Fair	1.1	1.1	1.1	18.1				17.0	30.0	-	No	?	trunk has completely enveloped fence on west side	-
AR	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	33.7	10,26,19	Poor	Poor	1.4	4.4	1.4	1.4	0.0	3.0	0.0	0.0	30.0	Exceptional	No	?	tree is nearly dead, probable likelihood of large branch failure in two years targets: portable, access road, hospital parking	Consider removal
AS	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	26.0		Poor	Poor	1.1	1.1	1.1	4.1				3.0	30.0	-	No	?	tree nearly dead, poses risk, should be removed	Consider removal
AT	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	19.0		Poor	Poor	0.8	0.8	0.8	3.8				3.0	30.0	-	No	?	tree nearly dead, poses risk, should be removed	Consider removal
AU	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	26.0		Poor	Poor	1.1	1.1	1.1	4.1				3.0	30.0	-	No	?	tree nearly dead, poses risk, should be removed	Consider removal
AV	poni	<i>Populus nigra 'Italica'</i>	<i>Lombardy poplar</i>	11.0		Poor	Poor	0.5	0.5	0.5	3.5	0.0	0.0	0.0	3.0	30.0	-	No	?	tree nearly dead, poses risk, should be removed	Consider removal

APPENDIX D: GREENHOUSE GAS EMISSIONS WORKSHEET



Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# Units	Square Feet (in thousands of square feet)	Emissions Per Unit or Per Thousand Square Feet (MTCO2e)			Lifespan Emissions (MTCO2e)
			Embodied	Energy	Transportation	
Single-Family Home.....	0		98	672	792	0
Multi-Family Unit in Large Building	0		33	357	766	0
Multi-Family Unit in Small Building	0		54	681	766	0
Mobile Home.....	0		41	475	709	0
Education		175.0	39	646	361	182959
Food Sales		0.0	39	1,541	282	0
Food Service		0.0	39	1,994	561	0
Health Care Inpatient		0.0	39	1,938	582	0
Health Care Outpatient		0.0	39	737	571	0
Lodging		0.0	39	777	117	0
Retail (Other Than Mall).....		0.0	39	577	247	0
Office		0.0	39	723	588	0
Public Assembly		0.0	39	733	150	0
Public Order and Safety		0.0	39	899	374	0
Religious Worship		0.0	39	339	129	0
Service		0.0	39	599	266	0
Warehouse and Storage		0.0	39	352	181	0
Other		0.0	39	1,278	257	0
Vacant		0.0	39	162	47	0

Section II: Pavement.....

Pavement.....		110.00				5500
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Total Project Emissions:

188459

Data entry fields