

Appendix I

SEPA Checklist

ENVIRONMENTAL CHECKLIST

for the proposed

Pike Place Market Waterfront Entrance Project

(Master Use Permit No. 3015514)



prepared for

City of Seattle Department of Planning and Development

August 16, 2013

REVISED November 18, 2013

Pike Place Market Preservation and Development Authority (PDA)

*EA Engineering, Science and Technology, Inc.
The Miller Hull Partnership
Tree Solutions
Heffron Transportation, Inc.*

--PREFACE--

The purpose of this Environmental Checklist is to identify and evaluate probable environmental impacts that could result from the *Proposed Action* and to identify measures to mitigate those impacts. The *Proposed Action* would involve development of the project site bounded by Western Avenue to the east, the Alaskan Way Viaduct (SR 99) to the west, Victor Steinbrueck Park to the north and the Heritage House and Market Parking Garage to the south. For purposes of this analysis, the *Proposed Action* is referred to as the ***Pike Place Market Waterfront Entrance Project***. Proposed development on the site would include a 45,730-square foot building with below-grade parking for approximately 300 vehicles. Of the total building square footage, approximately 18,000 square feet would be for retail/commercial uses and 27,000 square feet would be for housing (40-units). Approximately 33,000 sq. ft. of public roof terrace and walkways would also be provided as part of the development.

The State Environmental Policy Act (SEPA)¹ requires that all governmental agencies consider the environmental impacts of a proposal before the proposal is decided upon. This Environmental Checklist has been prepared in compliance with the State Environmental Policy Act; the SEPA Rules, effective April 4, 1984, as amended (Chapter 197-11, Washington Administrative Code); and the Seattle City Code (25.05), which implements SEPA.

This document is intended to serve as SEPA review for the site preparation work, grading/excavation, building construction, and operation of the proposed ***Pike Place Market Waterfront Entrance Project***. Probable significant environmental impacts associated with project-related activities are disclosed in this document. Analysis contained in this Environmental Checklist is based on Master Use Permit (MUP) plans for the project, which are on-file with the Seattle Department of Planning and Development (DPD) (MUP #3015514). While not construction-level detail, the schematic plans accurately represent the eventual size, location and configuration of the structures and are considered adequate for analysis and disclosure of environmental impacts.

This Environmental Checklist is organized into three major sections. *Section A* of the Checklist (starting on page 1) provides background information concerning the *Proposed Action* (e.g., purpose, proponent/contact person, project description, project location, etc.). *Section B* (beginning on page 16) contains the analysis of environmental impacts that could result from implementation of the proposed project, based on review of major environmental parameters. This section also identifies possible mitigation measures. *Section C* (page 42) contains the signature of the proponent, confirming the completeness of this Environmental Checklist.

Project-relevant analyses that served as a basis for this Environmental Checklist include: the *Greenhouse Gas Emissions Worksheet* (EA, 2013); the *Transportation Impact Analysis* (Heffron Transportation, 2013); the *Tree Inventory* (Tree Solutions, 2013), and the *Solar Glare Analysis* (EA, 2013) each are included in this Environmental Checklist as **Appendices A, B, C** and **D** respectively. Another report, the *Cultural Resources Assessment* (Northwest Archaeological, 2013), has been submitted to DPD and is on-file as part of the Master Use Permit (MUP) application (MUP #3015514).

¹ Chapter 43.21C. RCW

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A. BACKGROUND

1. Name of proposed project, if applicable:

Pike Place Market Waterfront Entrance Project

2. Name of applicant:

Pike Place Market Public Development Authority

3. Address and phone number of applicant and contact person:

Applicant

Pike Place Market Public Development Authority

85 Pike Street, Room 500

Seattle, WA 98101

Tel: 206-682-7453

Contact Person

Steve Doub

The Miller Hull Partnership

71 Columbia, 6th Floor

Seattle WA 98104

Tel: 206-682-6837

4. Date checklist prepared:

November 18, 2013

5. Agency requesting checklist:

City of Seattle, Department of Planning and Development

6. Proposed timing or schedule (including phasing, if applicable):

The anticipated start of construction is June, 2014. Full operation of the proposed building is expected to occur by December 2015.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

*The proposed **Pike Place Market Waterfront Entrance Project** is adjacent to the Waterfront Seattle project. A future connection to vehicular and pedestrian components of the waterfront plan may be possible. Despite these possible future connections, the Proposed Action is not dependent upon the Waterfront project and can move forward independent of the Waterfront project, as designed.*

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

*Project-relevant analyses that served as a basis for this Environmental Checklist include: the Greenhouse Gas Emissions Worksheet (EA, 2013); the Transportation Impact Analysis (Heffron Transportation, 2013); the Tree Inventory (Tree Solutions, 2013); and the Solar Glare Analysis (EA, 2013); each are included in this Environmental Checklist as **Appendices A, B, C and D**, respectively. Another report, the Cultural Resources Assessment (Northwest Archaeological, 2013), has been submitted to DPD and is on-file as part of the Master Use Permit (MUP) application (MUP #3015514). In addition, view studies have been prepared and submitted to the Pike Place Market Historical Commission as part of the application for Certificate of Approval; additional viewshed analyses are included as part of this Environmental Checklist.*

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.

Yes. A Development Agreement between the City of Seattle and the Pike Place Market Preservation and Development Authority (PDA) is currently being established, which includes future vacation of a portion the SR-99 right of way.

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

Pike Place Market Historical Commission

- *Certificate of Approval from the Pike Place Market Historical Commission*

Department of Planning and Development

- *Master Use Permit (including SEPA Review and Zoning Code Review)*
- *Demolition Permit*
- *Building Permit*
- *Grading Permit*
- *Electrical Permits*

Department of Transportation

- *Street Use Permit*

Seattle King County Department of Health

- *Plumbing Permits*

U.S. Department of Interior, National Park Service

- *Section 106 Review under the National Historic Preservation Act*

Other

- *Public Funding (state, local and/or federal)*

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project. 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. (Lead agencies may modify this form to include additional specific information on project description.)

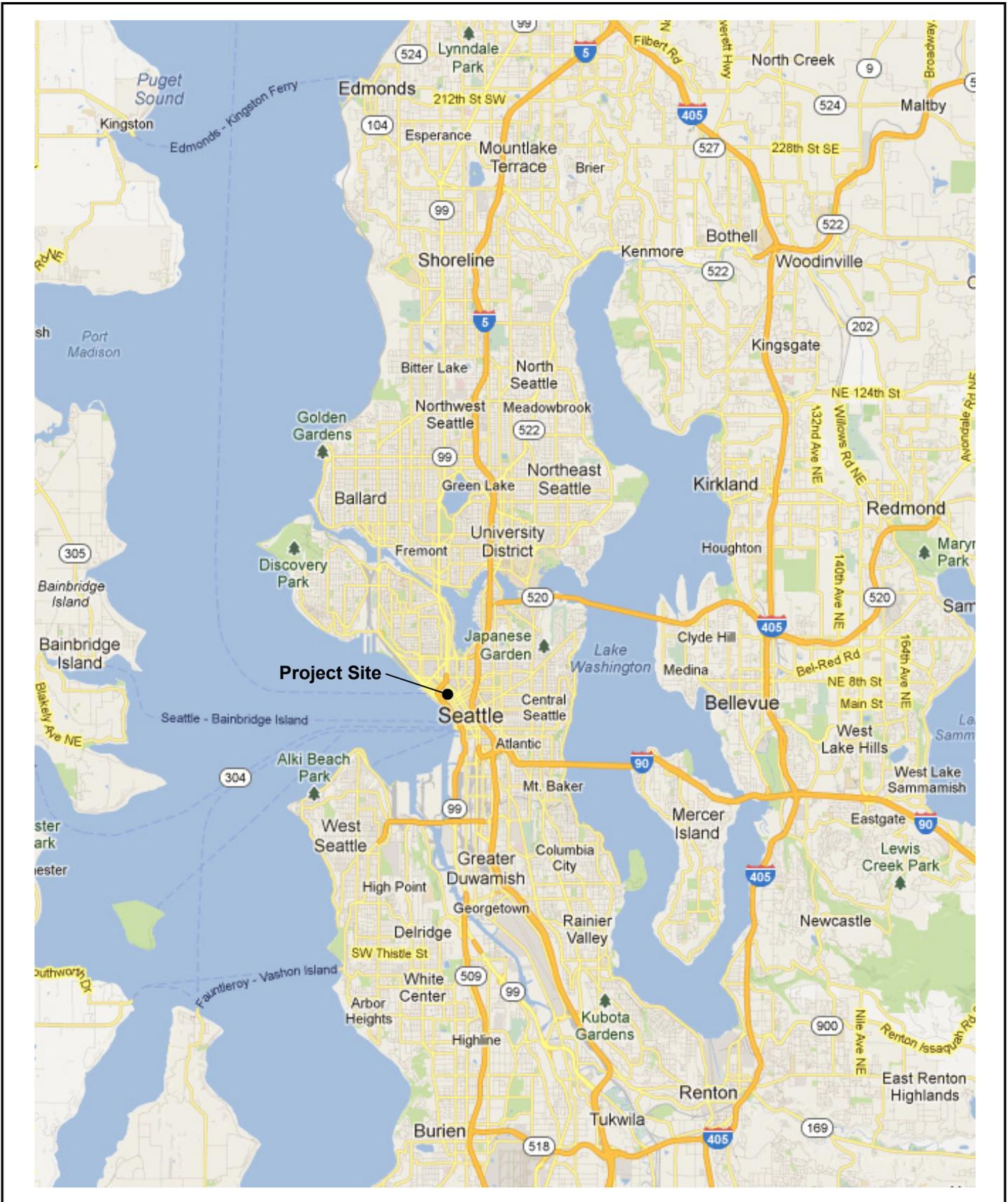
Overview of Proposal

*The proposed **Pike Place Market Waterfront Entrance Project** involves development of a 7-level mixed-use structure containing approximately 210,000 gross square feet (gsf). The proposed building would have 3 to 4 levels above-grade and the amount of gross floor area above-grade would approximate 45,731 sq. ft. Included within the building would be approximately 18,000 sq. ft. of retail/commercial space, 27,000 sq. ft. of low-income housing (40 units), and 4 levels of below-grade parking (approx. 124,000 sq. ft.) to accommodate approximately 302 vehicles. In addition, approximately 30,000 sq. ft. of public roof terrace and walkways would be provided. See **Figure 1** for a regional location map and **Figure 2** for a vicinity map.*

Existing Site Conditions

*The project site consists of two lots and encompasses an area of 38,993 sq. ft. (0.89 acres). See **Figure 3** for existing conditions.*

Pike Place Market Waterfront Entrance Environmental Checklist

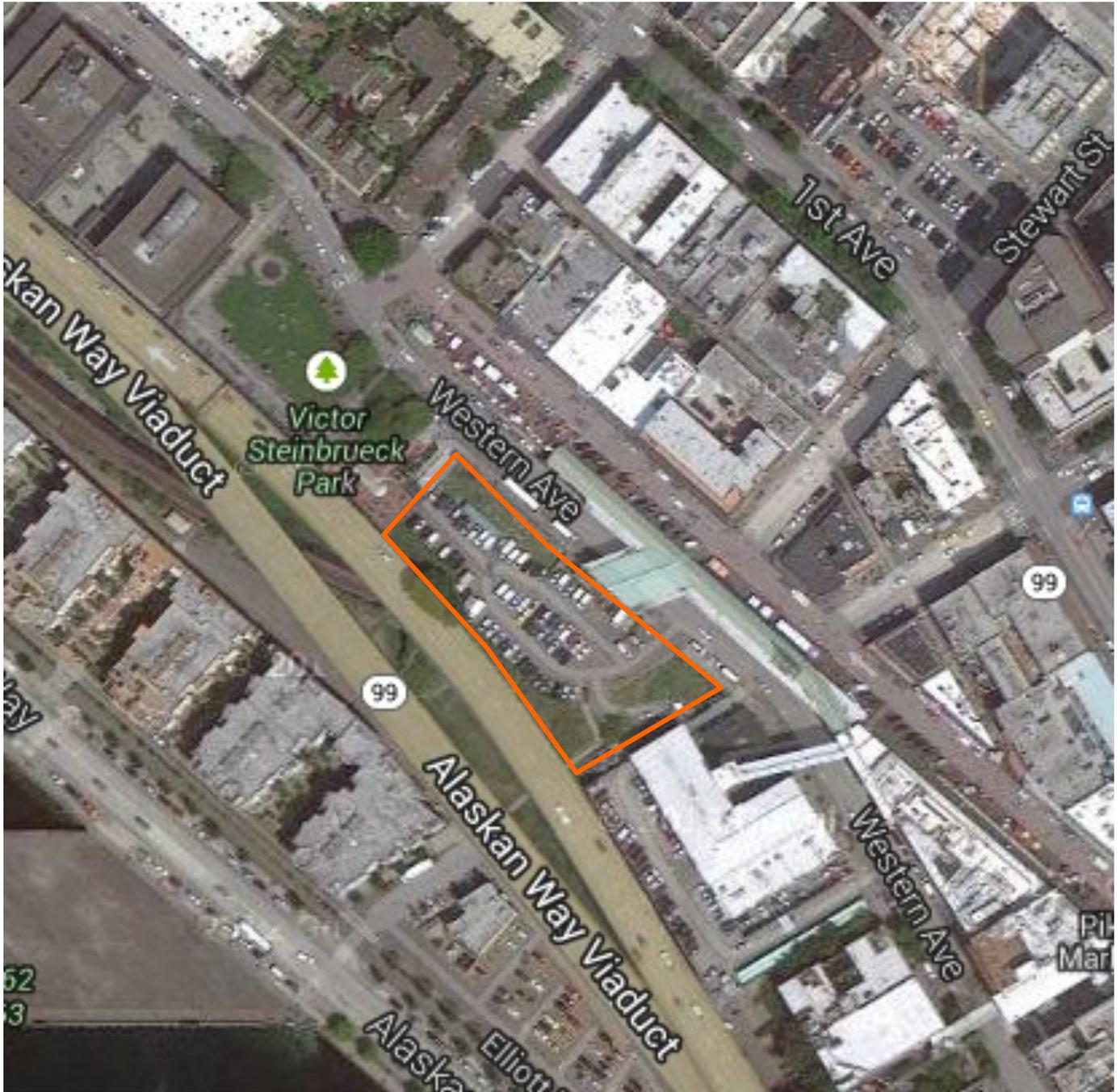


Source: EA, 2013.



Figure 1
Regional Map

Pike Place Market Waterfront Entrance
Environmental Checklist



— Project Site

Source: EA, 2013.



Figure 3
Existing Conditions

There are no buildings on-site; existing site uses include:

- Surface parking (84 spaces) with vehicular access from Western Avenue;
- Timber framed access stairs which connect the surface parking and Western Avenue to the Pike Place Market via the Joe Desimone Bridge;
- Two water cooling towers that are connected to the Pike Place Market's central water plant; and,
- Foundations from a building that was previously on the site (Market Municipal Building, which was destroyed by fire in 1974).

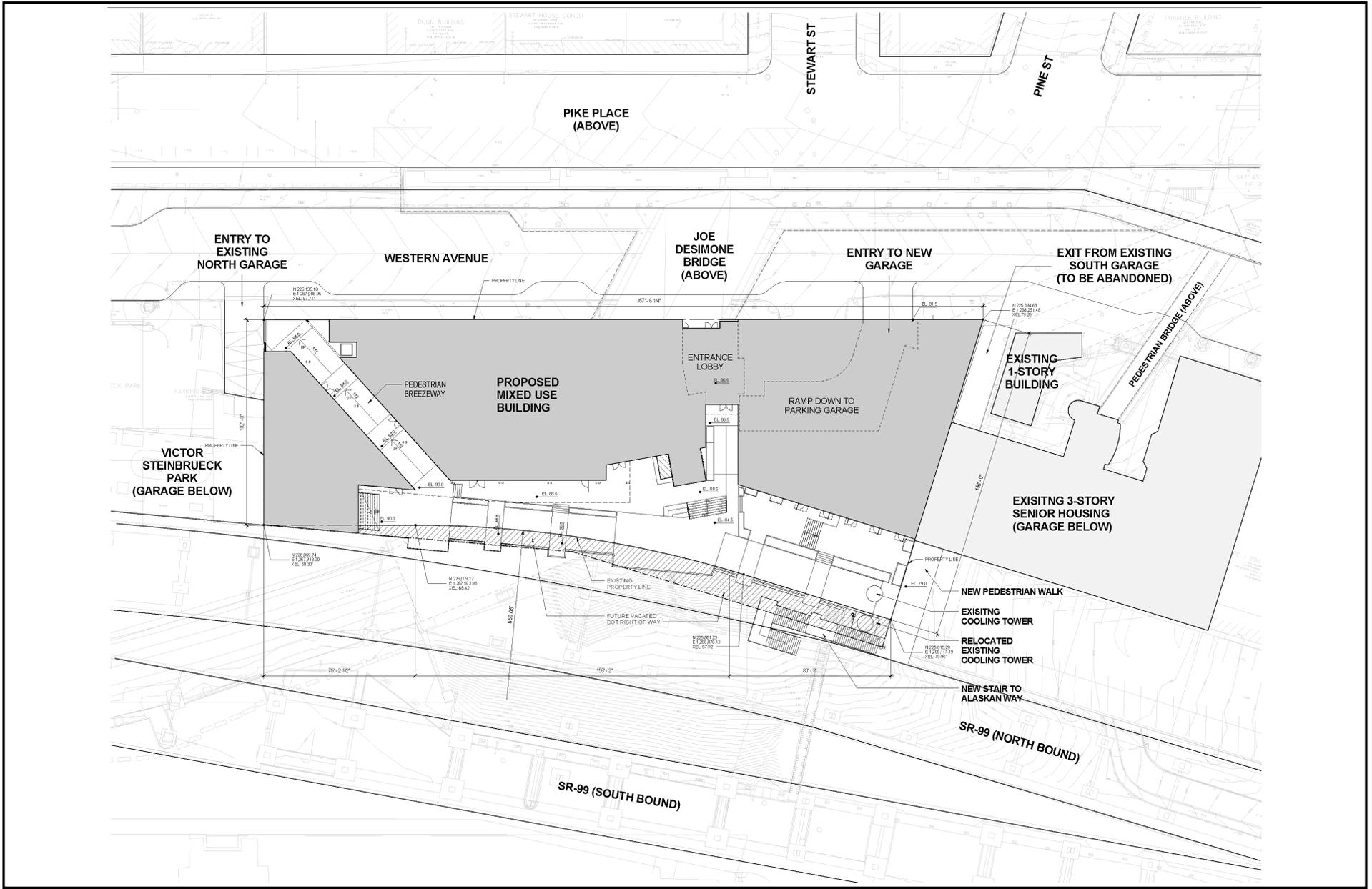
Proposed Building

The proposed **Pike Place Market Waterfront Entrance Project** would occupy the majority of the rectangular shaped site. As indicated by **Figure 4**, the footprint of the building would extend east to Western Avenue; south to Heritage House, a 3-story senior housing building; west to SR-99 right-of-way, and north to Victor Steinbrueck Park, which is located atop the Pike Place Market parking garage.

The following is an approximate breakdown of the mix of land uses that are proposed within the building by level:

- **Street-level (Western Avenue)** – This level would contain retail/restaurant and housing. The retail/restaurant component would approximate 18,680 sq. ft. with space directly accessible from Western Avenue or the arcade at the north end of the site. The majority of the retail/restaurant space would be located in the north two-thirds of this level. Live-work housing and housing common areas would approximate 5,045 sq. ft. and would be located in the south one-third of this level. Seven dwelling units are proposed.
- **Level 2** – This level would contain approximately 6,670 sq. ft. of housing within the south one-third of the building. Thirteen dwelling units are proposed.
- **Level 3** – This level would contain approximately 6,890 sq. ft. of housing (13 units) within the south one-third of the building.
- **Level 4** – This level would contain approximately 2,820 sq. ft. of housing (7 units) within the south one-third of the building.
- **Level P1** – This level would contain approximately 28,780 sq. ft. of parking (approximately 65 spaces).
- **Level P2** – This level would contain approximately 39,700 sq. ft. of parking (approximately 93 spaces).
- **Level P3** – This level would contain approximately 39,650 sq. ft. of parking (approximately 118 spaces).

Pike Place Market Waterfront Entrance Environmental Checklist



Source: The Miller Hull Partnership, 2013.

Figure 4
Site Plan

- **Level P4** – This level would contain approximately 28,780 sq. ft. of parking (approximately 27 spaces).

From the east (Western Avenue), the building would appear as a 2-story structure with the rooftop terrace at approximately the level of Pike Place Market. From the west (SR 99), the building would appear as a 4-story structure. The entrance lobby to the building would be centrally-located along the east side of the structure with direct access from Western Avenue. The building steps down toward the north and west preserving a "view cone" from Victor Steinbrueck Park and the upper market.

Open Space

Approximately 30,000 sq. ft. of public terrace and walkways are proposed for the **Pike Place Market Waterfront Entrance Project**. The public terrace would connect to Pike Place Market and would have views of Elliott Bay, Puget Sound and the Olympic Mountains to the west.

The open space at the Pike Place Market level of the proposed building would include overhead weather protection (in places), precast concrete unit pavers, a wooden deck, and multiple seating elements. A ramp would lead down to the north, with two switch-backs traversing the length of the commercial portion of the building down to the first floor.

Pedestrian Circulation

Pedestrian street level access to the entrance lobby would be provided from Western Avenue, as well as a connection from Pike Place Market via the Joe Desimone bridge. A pedestrian walkway ramp would also be provided from the street level (SR-99) on the west side of the building. This walkway would provide access the top of the building (Commercial Roof Terrace Level).

Parking, Access, and Loading

Below-grade parking would be provided for approximately 300 vehicles. As shown by **Figure 4**, one point of ingress and egress to the below-grade garage would be provided from Western Avenue. This access would be at the east end of the building. In the future, a second right-in/right-out only driveway is proposed on the Elliott-Western Connector that would be located in the footprint of the current Alaskan Way Viaduct.

There would be an internal connection between level P-3 of the new parking garage and the existing, adjacent Pike Place Market parking garage to the north.

Loading and service access to the building would be provided from Western Avenue.

Proposed Street Modifications

The site, currently occupied by a surface parking lot, is bounded to the east by Western Avenue and is accessed from a driveway on Western Avenue at the southeast corner of the site. A new full-access driveway would be located on

Western Avenue, and in the future, a second right-in/right-out only driveway could be located on the proposed Elliott-Western Connector, located in the footprint of the current Alaskan Way Viaduct. While the Proposed Action has planned for a second driveway on the Elliott-Western Connector, the project is not dependent on the future construction of the Elliott Western Connector.

Proposed Design Concept

The proposed building massing is intended to preserve existing iconic views from the Market while creating new public view opportunities and connections afforded by the site and potential future developments. To achieve this, the four level parking garage has been placed below grade to create a platform at the level of Western Avenue for the proposed commercial and residential parts of the building.

The one story commercial component, with its roof terrace, provides public view and assembly opportunities, while maintaining clear view access to Elliot Bay from the existing Pike Place Market. Access from the Pike Place Market would be provided through the existing Joe Desimone Bridge, which aligns with the level of the roof terrace. An exterior public stairway and ramp further enhance porosity through the site from Pike Place Market and Western Avenue, and facilitate possible future connections to the Waterfront Seattle redevelopment.

The four story residential component at the south end of the project site further maintains the balance between zoning allowances and view preservation by setting back to the east as it increases in height.

The Proposed Action would reference the vernacular concrete & timber structural systems of existing Pike Place Market buildings.

Site Modification

Development of this project would involve demolition and removal of the existing timber framed access stairs, surface parking and building foundations. It is anticipated that these actions would occur in summer 2014.

Site preparation for construction would involve excavation of the site for foundations and the below-grade parking portion of the building. Utility trenching and relocation would also be required.

Waterfront Program

As noted previously, the site of the proposed **Pike Place Market Waterfront Entrance Project** is adjacent to the Alaskan Way Viaduct (SR-99), which is to be removed and replaced with a tunnel extending from approximately S. King Street on the south to the vicinity of the Battery Street Tunnel on the north. These changes are part of the Alaskan Way Viaduct and Seawall Replacement Programs. The new SR-99 tunnel beneath Downtown is scheduled to open to traffic in 2015 and that segment of the existing Alaskan Way Viaduct that is adjacent to the project site is scheduled to be demolished in 2016. It is proposed, as part of the SR-99 project.

*With removal of the viaduct, new opportunities to open the Seattle waterfront to the public would be presented. As such, one of the projects associated with the Waterfront Program is the **Overlook Walk**, a landscaped pedestrian connection that is proposed between Victor Steinbrueck Park and the Seattle Aquarium.*

*The proposed **Pike Place Market Waterfront Entrance Project** is independent of the Alaskan Way Viaduct replacement and the **Overlook Walk**. However, once both programs are complete, the proposed new building can be linked to the **Overlook Walk**, providing a pedestrian connection between the Pike Place Market and the waterfront. See **Figure 5** or a photosimulation of the proposed building together with a possible future linkage to the **Overlook Walk**.*

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 address of the project site is 1901 Western Avenue. The site is identified as PC-1 North in the Pike Place Market Urban Renewal Plan.

As noted, the project site is located in Seattle's Downtown Urban Center and contains an area of 38,993 square feet. The site is bounded by Western Avenue to the east; Heritage House, a 3-story senior housing building to the south; the Alaskan Way Viaduct (SR-99) to the west; and below grade structured parking with a park (Victor Steinbrueck Park) to the north.

The legal description of the project site is attached to the plans that are on-file with the City of Seattle (MUP #3015514).

Assessor's Parcel Numbers: 197720-0330 and 197720-0329.

Pike Place Market Waterfront Entrance Environmental Checklist



Source: *The Miller Hull Partnership, 2013.*



Figure 5
Pike Place Market Waterfront Entrance Site with Overlook Walk

B. ENVIRONMENTAL ELEMENTS

1. Earth

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

The parking lot portion of the site is relatively flat and generally ranges between approximate elevations of 80 and 75 feet, and slopes downward to the northwest. A retaining wall supports Western Avenue on the eastern side of the site, where the street level is up to approximately 15 feet above the parking lot grade.

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

The southwest portion of the site is designated as a "Steep Slope" Environmentally Critical Area (ECA). Because the site is located in a downtown zone, the steep slope will be treated as a landslide-prone ECA, rather than a steep slope ECA. A modification of the ECA submittal requirements has been requested pursuant to Director's Rule 3-2007 because the project will completely remove and stabilize the slope condition. The steepest slope on the site is approximately 50 percent.

- 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 prime farmland.**

The site is underlain by 30 to 45 feet of medium stiff silt and clay with some pockets of silty sand and sandy silt. Deposits of non-engineered fill, debris, and landslide are anticipated. Below this layer exists glacial deposits consisting of very stiff silt and clay.

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

The Puget Sound region is a seismically active region, thus the site could experience seismic activity. However, as noted above, due to the relatively dense nature of the soils at the site, the risk of liquefaction, settlement, and landslides at the site is considered low.

- e. **Describe the purpose, type, and approximate quantities of any filling or grading proposed. Indicate source of fill.**

Grading and trenching will be performed to attain proposed site grades. It is estimated that excavation for the proposed project would result in the

removal of approximately 44,600 cubic yards of earth. It is not anticipated that any fill will be required.

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

Erosion is possible in conjunction with any construction activity. Site work would expose soils, but the implementation of a Temporary Erosion Sedimentation Control (TESC) plan would mitigate potential impacts. Once the project is operational, no erosion is anticipated to occur as all disturbed areas will be stabilized through permanent plantings, paving or the new building.

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

Overall, impervious lot coverage on the site will be 100 percent.

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

The TESC plan will include sedimentation barriers, diversion swales, filtration tanks, inlet protection, wheel wash areas and aggregate construction access driveways. These measures are intended to stop the migration of exposed soils.

2. Air

- a. What type of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke, greenhouse gases) during construction and when the project is completed? If any, generally describe and give approximate quantities if known.**

The proposed project could result in temporary, localized increases in air emissions (suspended particulates and carbon monoxide) due to construction activities. The proposed project has been designed to conform to the applicable regulations and standards of agencies regulating air quality in Seattle. These include the Environmental Protection Agency (EPA), the Washington State Department of Ecology (DOE), and the Puget Sound Clean Air Agency (PSCAA).

During operation of the Proposed Action, air quality emissions sources would include automobile emissions, emissions associated with the parking garage ventilation system, and future commercial tenants (kitchen ventilation).

The proposed project is not expected to result in violations of ambient air quality standards either during construction or long-term operation.

*An analysis of potential greenhouse gas emissions estimates that the project may result in lifespan greenhouse gas emissions of approximately 61,757 MTCO₂e.² The worksheet is included as **Appendix A** to this Environmental Checklist.*

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

No offsite sources of emissions or odors that may affect the proposed project have been identified.

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

To reduce dust emissions during construction, exposed areas will be sprinkled with water during dust-generating activities.

3. Water

a. Surface:

- 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.**

The site overlooks the Seattle waterfront and Puget Sound, which are located approximately 300-400 feet to the west.

- 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.**

No. Project work will not occur within 200 feet of a surface water body.

² MTCO₂e is defined as Metric Tonne Carbon Dioxide Equivalent; it equates to 2204.62 pounds of CO₂. This is a standard measure of amount of CO₂ emissions reduced or sequestered. Carbon is not the same as Carbon Dioxide. Sequestering 3.67 tons of CO₂ is equivalent to sequestering one ton of carbon.

- 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 will be placed in or removed from any surface water body as a result of this proposed project.

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

No. The proposed project will not require any surface water withdrawals or diversions.

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

No. The project site does not lie within a 100-year floodplain and is not identified as a flood prone area on the City of Seattle Environmentally Critical Areas map.

- 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.**

No. There will be no discharge of waste materials to surface waters.

b. Ground:

- 1) Will ground water be withdrawn, or will water be discharged to ground water? Give general description, purpose, and approximate quantities if known.**

No. Groundwater will not be withdrawn, nor will water be discharged to ground water.

- 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.**

Waste material will not be discharged into the ground from septic tanks or other sources. The proposed project will be connected to the existing City sewer and stormwater systems and will discharge directly to those systems.

c. Water Runoff (including storm water):

- 1) Describe the source of runoff (including storm water) 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.**

Existing and new impervious surfaces constructed on the site are and will continue to be the source of stormwater runoff from the proposed project, including from pedestrian pathways and plazas. Runoff collection will be through a system of trench and area drains. Water will flow to the plumbing system and will discharge to the existing public dedicated storm drain system in Western Avenue. The public storm drain system conveys to the west and outfalls to Elliott Bay.

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

The proposed project will comply with applicable requirements relating to surface water runoff control and water quality including the City's Drainage Control Ordinance. The proposed project will also require City approval of a Comprehensive Drainage Control Plan (including Construction Best Management Practices, Erosion and Sediment Control approvals) as part of the building permit process.

Trench and area drains will have a system of gratings to prevent debris from entering the system. As the watershed consists of non-pollutant generating surfaces, treatment is not proposed.

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

No surface, ground or runoff water impacts are anticipated. The project site is impervious pavement in the existing condition and will be impervious in the

proposed condition, so the volume of runoff is anticipated to remain the same. Infiltration of surface waters will not be allowed in accordance with geotechnical engineering recommendations due to the nearby slopes.

4. Plants

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

- deciduous trees:
- evergreen tree:
- shrubs
- grass
- pasture
- crop or grain
- wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
- water plants: water lily, eelgrass, milfoil, other
- other types of vegetation

The **Pike Place Market Waterfront Entrance** site contains vegetation that includes Himalayan Blackberry, Scotch Broom and Ivy. There are also two deciduous trees located on-site, including:

- 1 Yucca (estimated 4.6" across)
- 1 Mimosa (estimated 10" across)

There are also two offsite trees in close proximity to the west boundary of the site, along the Alaskan Way Viaduct, which could be affected by the proposal, including:

- 1 Flower Cherry (estimated 18" across)
- 1 Red Alder (estimated 28" across)

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

All trees and vegetation on the site would need to be removed to accommodate the proposed project, including the two offsite trees which border the west boundary of the site. A certified arborist evaluated all four trees and determined that none meet the City of Seattle's definition of an Exceptional tree. Refer to **Appendix C** for details.

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

No threatened or endangered species are known to be on or near the site.

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

Proposed landscaping would be comprised of evergreen and deciduous trees, shrubs and groundcover that are either native or adapted to the Northwest, are generally drought tolerant, very durable given intense use of the site, require relatively low maintenance and will aim to provide seasonal interest. With the exception of Western Avenue planting, most proposed plant material would be over structure.

5. Animals

a. Circle any birds and animals that have been observed on or near the site or are known to be on or near the site:

birds: hawk, heron, eagle, songbirds,
other: _____

mammals: deer, bear, elk, beaver,
other: _____

fish: bass, salmon, trout, herring, shellfish,
other: _____

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

No threatened or endangered species are known to be on or near the site.

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

No. The site is not known to be part of a migration route.

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

No specific measures are proposed to enhance wildlife and/or habitat other than the planned landscaping, which could potentially contribute to an enhanced urban wildlife habitat in this portion of the City. Proposed landscaping will be composed of mostly Pacific Northwest trees, shrubs and groundcover, or vegetation adapted for the Northwest.

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.**

Electricity and natural gas.

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

No. The proposed project will not affect solar access associated with 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:**

The proposed project would use the existing Pike Place Market central water plant for both hot and cold water. Residential ventilation and exhaust would utilize heat recovery ventilators (HRVs). The building would be constructed to comply with the 2012 Seattle Energy Code. It is also possible that the Proposed Action could target LEED Gold Certification. Potential LEED and sustainable measures are currently being reviewed as part of the building design process.

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.**

No. There are no environmental health hazards that will occur as a result of the proposed project.

- 1) **Describe special emergency services that might be required.**

No special emergency services are anticipated as a result of this proposed project. As is typical of development in urban areas, it is possible that normal fire, medical, and other emergency services may, on occasion, be needed from the City of Seattle.

2) Proposed measures to reduce or control environmental health hazards, if any:

None are required or proposed.

b. Noise

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

Traffic noise associated with adjacent streets is relatively high during the day due to the distance between the project site and the Alaskan Way Viaduct (SR-99), which is heavily traveled. This structure is anticipated to be removed by 2016, pending the construction of the SR 99 tunnel.

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

Construction-related noise will occur as a result of on-site construction activities associated with the proposed project. Construction noise, however, will be short-term and will be the most noticeable noise generated by the proposed project. This includes construction activity on-site, at associated construction staging areas, and noise associated with construction-related traffic. The proposed project will comply with provisions of Seattle's Noise Code (Chapter 25.08 SMC); no noise variances are anticipated.

Once the project is operational, no significant long-term noise impacts are anticipated. The operational noise associated with the proposed project would be comparable to existing noise generated by the Pike Place Market (i.e. traffic, vendors, tourists, buskers etc.). Once operational, the project will comply with provisions of the City of Seattle's Noise Code.

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

Limit hours of construction to comply with noise control ordinance.

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The site is currently used for surface parking.

Adjacent to the site to the south is a 3-story low income senior housing building (Heritage House) with below grade structured parking. To the north is also below grade structured parking with a landscaped lid (Victor Steinbrueck Park). To the west is the Alaskan Way Viaduct (SR-99) and to the east are Western Avenue and the Pike Place Market.

b. Has the site been used for agriculture? If so, describe.

No.

c. Describe any structures on the site.

Structures currently on the site include timber framed access stairs connecting to the Pike Place Market via the Joe Desimone Bridge. As well, foundations from the building previously on the site (the Market Municipal Building, destroyed by fire in 1974) are also present.

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

Yes, the stairs and foundations described in item 8c, above, would be demolished as part of the planned excavation and shoring construction sequence. Temporary stairs would be provided by the Contractor, if required to maintain Code compliant exiting.

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

The site is currently zoned Pike Market Mixed-85 (PPM-85).

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

The project site is located in the Commercial Core neighborhood of the Downtown Urban Center. The Future Land Use Map in the Seattle Comprehensive Plan identifies the site as an Urban Center. Urban Centers are intended to provide mixed-use neighborhoods with nearby access to housing, jobs and transportation.

The site is also located in the Pike Place Urban Renewal Project area; a 22-acre planning area that establishes goals and objectives for Pike Place

Market, and includes development, land use and building controls. Within this plan, the **Pike Place Market Waterfront Entrance Project** site is identified as PC1-North in the Land Use Plan. The PC-1 land use area is noted to be the location of structures containing public parking and should provide for the development of commercial, residential and public spaces to complement the existing Market activity.

The Pike Place Market Historical Commission is in charge of reviewing and approving applications for design and use changes within the Pike Place Market Historical District (in which the **Pike Place Market Waterfront Entrance Project** site is located). Any changes within the District must be approved and a Certificate of Approval issued by the Commission. The Commission bases approval decisions on the standards set forth in the Pike Place Market Historical District Guidelines and the District Ordinance (SMC 25.24).

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

N/A

h. Has any part of the site been classified as an “environmentally critical” area? If so, specify.

Yes. The southwest portion of the site is designated as a “Steep Slope” Environmentally Critical Area (ECA).

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

*Approximately 200 people would live and work in the completed **Pike Place Market Waterfront Entrance Project**.*

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

No people would be displaced by the Proposed Action.

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

No mitigation measures are necessary.

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

The Pike Place Market Urban Renewal Plan identifies parking, recreational commercial, residential and automobile service facilities inside parking structures as permitted uses on the PC1-N site. The plan notes that 100% site coverage is permitted, and the following Special Controls are detailed for the site:

1. *Stored automobiles shall not be exposed to view*
2. *Top floor shall take maximum advantage of natural light by utilizing transparent roofs, skylights, monitors, clearstories, etc.*
3. *Pedestrian access shall be provided to adjacent land use areas. Pedestrian and vehicular access to Main Market structures shall be provided by the following bridges across Western Avenue, as illustrated on Land Use Map, Exhibit B:*
 - *B3 -- existing rehabilitated pedestrian bridge*
 - *B4 -- existing rehabilitated pedestrian/vehicular bridge providing access to Market parking facilities from Pike Place*
 - *B5 -- new covered pedestrian bridge connecting Pike Place level of Main Market building with top floor of structure in PC-1.*

*The proposed **Pike Place Market Waterfront Entrance Project** includes below-grade parking, low income housing, retail/commercial and public terrace uses; these are all uses that are permitted under the Plan. In accordance with all special controls: the parking would be below-grade, and would not be exposed to view; the top floor of the building would contain a public rooftop terrace designed to take maximum advantage of natural light and views. The new building would be connected to adjacent land use areas, including the Pike Place Market via the Joe Desimone Bridge.*

9. Housing

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

Approximately 40 low-income housing units would be provided as part of the Proposed Action.

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

No housing would be eliminated as part of the Proposed Action. As noted previously, the site is currently used for surface parking.

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

No housing impacts have been identified and no mitigation measures are necessary.

10. Aesthetics

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

*The proposed **Pike Place Market Waterfront Entrance Project** building would be four stories tall (approximately 45 feet) tall, and would be approximately 45 feet above Western Avenue at its tallest. The exterior of the building would be primarily glass, concrete and metal panels.*

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

The existing surface parking area located on the site would be replaced with a new four-story building. Therefore, views toward the project site from the east would be altered from that of a relatively open area with a view of Puget Sound, to a modern, mid-rise structure. From nearby locations along Western Avenue, existing background views (i.e. views of Puget Sound and the Olympic Mountains beyond the parking area) would be obstructed by the new, taller building. However, the proposed public terrace area on the rooftop of the building would be accessible to the public from Western Avenue, and would provide the same view of the Seattle waterfront as currently exists, only from a higher elevation.

The proposed development would include landscaping and perimeter lighting that would alter street level views along Western Avenue to include some vegetation along with new building surfaces.

The City's public view protection policies are intended to "protect public views of significant natural and human-made features: Mount Rainier, the Olympic and Cascade Mountains, the downtown skyline, and major bodies of water including Puget Sound, Lake Washington, Lake Union and the Ship Canal, from public places consisting of specified viewpoints, parks, scenic routes, and view corridors identified in Attachment 1" to the SEPA code.³ Of the City's 87 officially-designated public viewpoints, only one could be affected by the Proposed Action – Victor Steinbrueck Park. This viewpoint is adjacent to the project site (north boundary). See description of Viewpoint 3 below.

City ordinances⁴ also identify specific scenic routes throughout the City in which view protection is to be considered. In the vicinity of the project site, there are two designated Scenic Routes – SR-99 and Alaskan Way. As both of these roadways are located to the west of the project site, and scenic views associated with these roadways are located further to the west of the roadways, impacts to scenic views are not anticipated.

View studies have been completed to illustrate views from surrounding streets under existing conditions and the view that would result with the

³ Seattle Municipal Code Chap. 25.05.675 P.2.a.i.

⁴ Ord. #97025 (Scenic Routes Identified by the Seattle Engineering Department's Traffic Division) and Ord. #114057 (Seattle Mayor's Recommended Open Space Policies).

Proposed Action. **Figure 6** is a map showing the location of each viewpoint photosimulation.

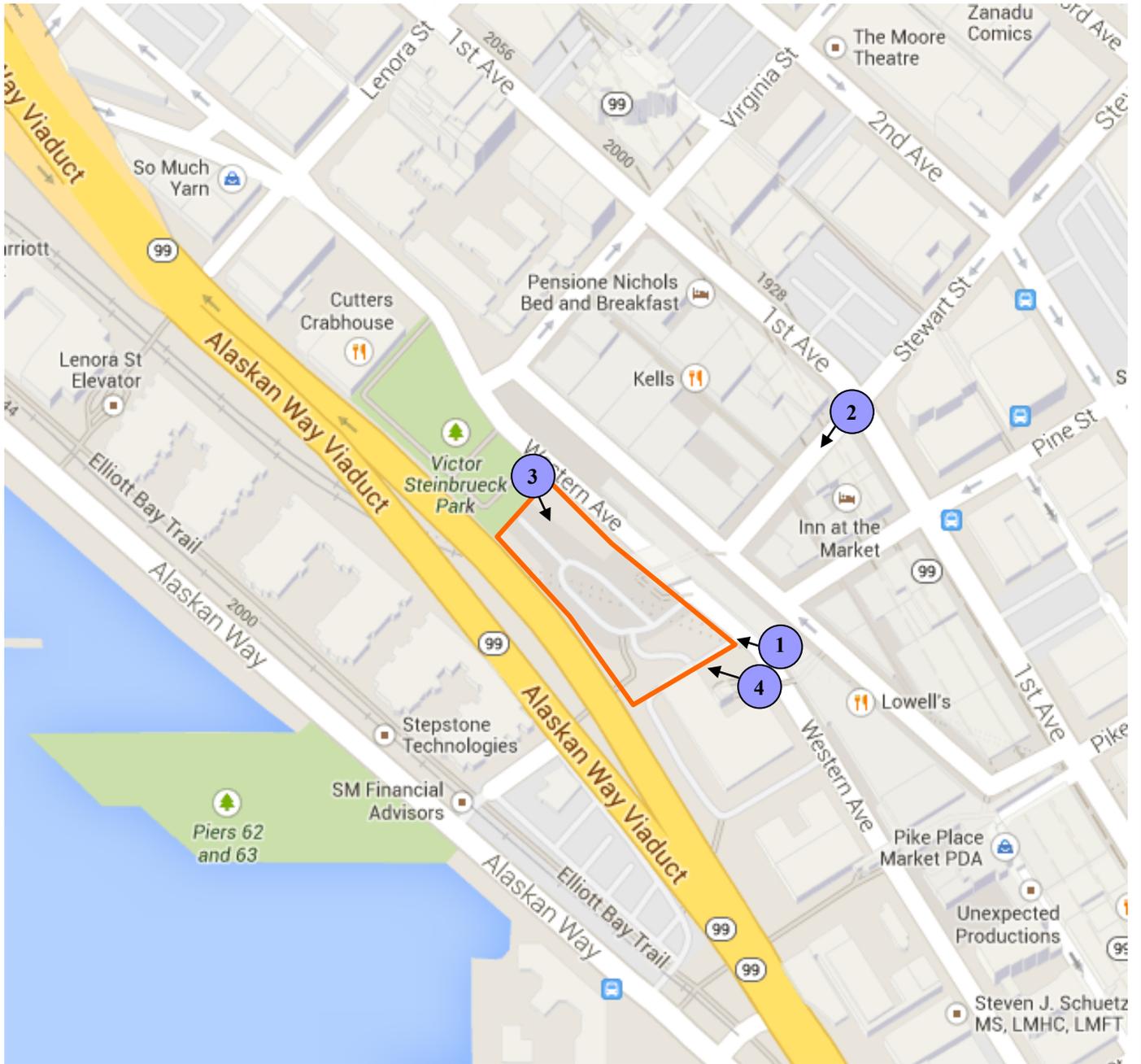
Viewpoint 1 – **Figure 7** depicts the existing view from Western Avenue looking west from the Heritage House senior housing building adjacent to the south site boundary. As shown, the existing view from this location includes the skyline and mountains in the distance, with the Joe Desimone Bridge and the Pike Place Market Parking Garage in the mid-field view. With the Proposed Action, the background views of the skyline and mountains would be replaced with that of a four-story building.

Viewpoint 2 – **Figure 8** depicts the existing view from Stewart Street near the intersection with First Avenue, looking southwest towards the site. As shown, the existing view includes the street corridor lined by low- and mid-rise buildings on both sides; at the terminus of Stewart Street the Pike Place Market North Arcade building is visible, perpendicular to the street. The North Arcade building is a one-story, partially-open shed structure; the **Pike Place Market Waterfront Entrance** site is behind this building and is not visible under existing conditions. Puget Sound is visible in the background, behind the North Arcade building. Under the proposed condition, a portion of the new building would be visible above and behind the North Arcade building, but the background view of the water would otherwise remain generally the same.

Viewpoint 3 – **Figure 9** depicts the existing view to the southwest from the southern entrance to Victor Steinbrueck Park along Western Avenue. As shown, under existing conditions the entrance to the Market Place parking garage is visible in the foreground. The **Pike Place Market Waterfront Entrance Project** site with the existing surface parking lot is visible in the mid-field view, and the Alaskan Way Viaduct is visible in the background with partial views of south Downtown. Under the proposed view, the existing view of the site's surface parking lot would be replaced with that of the new building and rooftop terrace. From this location, the new building would appear as two-stories, with the second level as the open-air rooftop terrace. Stairs for accessing the rooftop level of building are also visible under the proposed view.

Viewpoint 4 – **Figure 10** depicts the existing view to the northwest from the pedestrian bridge connecting the market to the parking garage directly south of the site. As shown, under existing conditions the Joe Desimone Bridge and Arcade is visible to the right (east), and the exiting surface parking lot on the project site is visible to the west. Beyond the parking area, the Alaskan Way Viaduct is visible and partial views of Puget Sound are visible in the beyond the Viaduct. Under the proposed view, the existing view of the site's surface parking lot would be replaced with that of the new building, which would appear as four stories from this vantage point, with the top floor being at the same level as the Joe Desimone Bridge/Arcade. Views of the Alaskan Way Viaduct and Puget Sound would be obscured by the new building.

Pike Place Market Waterfront Entrance Environmental Checklist



— Project Site

Source: EA, 2013.



Figure 6
Viewpoint Location Map

Pike Place Market Waterfront Entrance Environmental Checklist

Existing



Proposed



Source: *The Miller Hull Partnership, 2013.*

Pike Place Market Waterfront Entrance Environmental Checklist

Existing



Proposed



Source: *The Miller Hull Partnership, 2013.*

Pike Place Market Waterfront Entrance Environmental Checklist

Existing



Proposed



Source: *The Miller Hull Partnership, 2013.*

Pike Place Market Waterfront Entrance Environmental Checklist

Existing



Proposed



Source: *The Miller Hull Partnership, 2013.*

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

*The building is designed to step down toward the north and west, preserving a "view cone" from Victor Steinbrueck Park and the upper Pike Place Market. The applicant is working closely with the Pike Place Market Association and Pike Place Market Historical Commission to study the proposed **Pike Place Market Waterfront Entrance Project**. Although views are altered, the view impacts are not considered significant adverse impacts.*

11. Light and Glare

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

New temporary sources of light and glare would be introduced to the site during construction activities. The lighting sources would be associated with building construction, trucks and other equipment. Lighting associated with construction activities would be limited by City of Seattle regulations, which limit activities during night-time hours; this would lessen the amount of construction lighting necessary. Light and glare sources would be temporary in nature, are a life and safety requirement of the construction process, and would not be assumed to be significant.

Following the site redevelopment, light and glare from both stationary sources and mobile sources, particularly at night would continue to occur. Stationary sources of light could include interior lighting, building and parking entrance and street lighting, pedestrian-level façade lighting, and pedestrian-oriented lighting within public terrace areas. Mobile sources would primarily include light from vehicle headlights entering and exiting the site and accessing the on-site, below-grade parking garage. Lighting from the site would appear as a continuation of the urban lighting pattern in the area, and no significant light-related impacts would be anticipated.

New sources of glare could include solar reflection from building facades and windows and reflections from vehicle traffic.

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

*With an unobstructed western exposure, some glare from late afternoon direct sun may occur. A solar glare analysis has been prepared for this project (**Appendix D**) to analyze the potential impacts associated with reflection from the building facades. The solar glare analysis indicates that while northbound and southbound traffic on SR-99 could occasionally experience reflected solar glare from the west façade of the proposed building, while noticeable, such glare for the most part would be outside the cone-of-influence and would not be expected to cause problems for motorists nor differ substantially from periodic glare from stationary and mobile sources that motorists typically experience. Please see **Appendix D** for more detail.*

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

There are no off-site sources of light or glare that would affect the proposal.

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

The project would utilize glazing with a low reflectivity and could employ exterior shading devices along the west facade. As well, exterior building lighting and pedestrian lighting could be selected and located to ensure that light is directed downward and away from adjacent off-site properties to minimize the light spillage-related impacts to nearby uses.

12. Recreation

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

Pike Place Market is located directly to the east of the site and is a major regional tourist attraction. Victor Steinbrueck Park borders the site to the north. Victor Steinbrueck Park is 0.8-acre area that sits atop the Pike Place Market Parking Garage. The park features lawns, benches, tables, two 50-foot cedar Totem Poles and views of Puget Sound,

The planned Seattle waterfront redevelopment will directly connect to the project site and will provide access to the entire Seattle waterfront and the Olympic Sculpture Park.

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

No. The Proposed Action would not displace any existing recreational uses. As noted previously, the site is currently used for surface parking.

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

The Pike Place Market Waterfront Entrance Project will include approximately 33,000 square feet of public roof terrace and walkways providing views of the Seattle Waterfront, the Olympic Mountains and Puget Sound, as well as increased area for food and craft oriented vendors and events associated with the Pike Place Market.

13. Historic and Cultural Preservation

- a. **Are there any places or objects listed on, or proposed for, national, state, or local preservation registers known to be on or next to the site? If so, generally describe.**

*The **Pike Place Market Waterfront Entrance Project** site is located within the City-designated Pike Place Market Historical District. This seven-acre District was established in 1971 under Ordinance 100475 (SMC 25.24), and is governed by the Pike Place Market Historical Commission (established by the same ordinance creating the Historical District).*

*The Pike Place Market is also listed in the National Register of Historic Places (NRHP) as a Historic District; however, the **Pike Place Market Waterfront Entrance Project** site is not located within the boundaries of the NRHP-designated District. The site is adjacent to the NRHP-designated Historic District.*

*The **Pike Place Market Waterfront Entrance Project** site is also within the area designated by the City of Seattle as the Government Meander line buffer that marks the historic shoreline. In accordance with City of Seattle Director's Rule 2-98, a Cultural Resources Assessment was prepared for the site and has been submitted to DPD and is on-file as part of the Master Use Permit.*

- b. **Generally describe any landmarks or evidence of historic, archaeological, scientific, or cultural importance known to be on or next to the site.**

Currently the site is a surface parking lot and is formerly the site of the Market Municipal Building (c. 1920).

Historic period archaeological remains on the site include a remnant foundation from the 1921 Municipal Market Building. This was recorded as part of the archaeological survey conducted for this project. The multi-story reinforced concrete frame building with wood posts contained basements, stores, market stalls, and an automobile garage. Originally, two bridges spanned Western Avenue to connect to the Municipal Market Building; today only one remains. The Municipal Market Building was damaged by fire in 1961 and 1974 and subsequently demolished. The site has been recommended as not eligible for listing in the NRHP; the State Historic Preservation Officer has not evaluated this determination.

The primary structure adjacent to the site from the Pike Place Market is the Joe Desimone Bridge, which was built over Western Avenue as a vehicular connection to the Market Municipal Building when it was converted to a parking structure in the 1960's. The Municipal Building parking garage was subsequently destroyed by fire in 1974. The existing bridge was enclosed

with a new roof and walls in the mid-1980's, resulting in its current configuration.

To the south of the site is the a three story senior housing building of Type V construction (Heritage House, c. 1989) on top of a cast-in-place parking garage (1988).

To the north is Victor Steinbrueck Park (1970-1984) built on top of a cast-in-place concrete parking garage on the site of the former Washington National Guard Armory (c.1909 demolished 1968).

The Washington State Department of Archaeology and Historic Preservation's Statewide Predictive Model classifies the project location as High Risk for buried archaeological resources. However, historic and recent landscape modifications including the urbanization of downtown Seattle have affected the visibility of the prehistoric archaeological record. On the site, substantial remodeling of the landscape has included portal construction and tunneling for the Great Northern rail tunnel, as well as cycles of grading, construction and demolition of various buildings and structures over a century. Cumulatively, these actions are likely to have destroyed or removed any prehistoric archaeological resources that might have been present with the site area.

Other evidence for potential archaeological resources includes the historic use of the project location between the 1880s and 1920s. The area was first platted in 1873, but the steep, ungraded hillside prevented substantial development until the 1920s. Instead, multiple wood frame "squatters shanties" appear on maps and photographs as early as 1888 and continued to be occupied during the construction of the Great Northern Railway Tunnel in 1903-1905 and the Pike Place Market in 1911. During the railroad tunnel construction an office and three bunkhouses for the railway company were constructed on the south end of the site adjacent to the existing cabins. Archaeological materials related to the cabins, their privies, tunnel construction and the occupation by construction crews may be present at the site.

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

The Proposed Action is being reviewed by both the Pike Place Market Association and the Pike Place Market Historical Commission and is under the auspices of the Pike Place Market Historical Commission Guidelines as well as the Pike Place Market Urban Renewal Plan.

An archaeological survey of the project location has been conducted and no further investigations were recommended due to previous disturbances of the site. If any potentially significant archaeological resources were identified during construction, then work will stop to allow for compliance with Director's Rule 2-98.

14. Transportation

- a. **Identify public streets and highways serving the site, and describe the proposed access to the existing street system. Show on site plans, if any.**

The site, currently occupied by a surface parking lot, is bounded to the east by Western Avenue and is accessed from a driveway on Western Avenue at the southeast corner of the site. The site is also bounded on the west by the Alaskan Way Viaduct (State Route 99 [SR 99]). The SR 99 right of way is the proposed location of the new Elliott-Western Connector that would be constructed after the Alaskan Way Viaduct is removed, as part of the SR 99 Bored Tunnel and Seattle Waterfront projects.

The new parking garage proposes a full-access driveway on Western Avenue, and in the future, a second right-in/right-out only driveway on the proposed Elliott-Western Connector that will be located in the footprint of the current Alaskan Way Viaduct. There will also be an internal connection between level P-3 of the proposed new garage and the existing Pike Place Market garage located immediately to the south of the site. While the Project anticipates including a second driveway on the Elliott-Western Connector, the Project is not dependent on the future construction of the Elliott Western Connector.

- b. **Is site currently served by public transit? If not, what is the approximate distance to the nearest transit stop?**

King County Metro (Metro) provides bus service throughout Downtown Seattle including along roadways near the project site. The closest stops are located at the First Avenue/Pine Street intersection (about 650 feet away) and at the Alaskan Way/Pine Street intersection (about 780 feet away). The stop at First Avenue/Pine Street is served by Metro Routes 113, 121, 122, 123, 125, and 99; the stop in Alaskan Way is served by Metro Route 99. These routes combine to provide frequent all-day service seven days per week to a variety of destinations in Seattle and beyond.

- c. **How many parking spaces would the completed project have? How many would the project eliminate?**

The completed project would consist of a new below-grade parking garage with approximately 300 spaces. The project would eliminate the existing surface parking lot, which has 84 parking spaces.

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

*No. The project is not expected to result in any adverse impacts that would require new roads or streets. See **Appendix B** for more information.*

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

The project will not occur in the immediate vicinity of air transportation. However, the site is located directly above the BNSF Railway's Downtown Seattle rail tunnel. The proposed future access to the Elliott-Western Connector would also cross over the top of the railway tunnel. The site is also located within about 500 feet of Elliott Bay and within about 800 feet of the Bell Harbor Marina; however, the project would not use water transportation.

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

*The proposed project is expected to generate up to 410 new trips per day on weekdays and 510 new trips per day on weekend days. Based on data from the existing Pike Place Market parking garage, peak volumes would occur between 5:00 and 6:00 P.M. on weekdays and between 2:00 and 3:00 P.M. on weekend days (for more information, see **Appendix B**).*

- g. Proposed measures to reduce or control transportation impacts, if any.**

For long-term conditions after the Alaskan Way Viaduct is removed and the new Elliott-Western Connector is constructed, no measures to reduce or control transportation impacts would be required and none are proposed. However, during interim conditions before the Viaduct is removed and the new Connector roadway complete, access to the new garage would be limited to the driveway proposed on Western Avenue or through the existing Pike Place Market Garage. It is also possible that Viaduct demolition would require all access to both the existing and proposed garages to be taken from the Western Avenue driveways. During this interim period, the applicant would provide signage internal to the garage to direct users to the Western Avenue egress. In addition, the applicant will monitor driveway operations on Western Avenue and may implement temporary turn restrictions (such as right-turns only for exiting traffic) if through traffic volumes on Western Avenue also increase due to Viaduct construction and cause excess delay to garage patrons. No other measures to reduce or control transportation impacts are required or proposed.

15. Public Services

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

It is anticipated that the Proposed Action would generate an incremental need for increased public services due to the higher number of tenants and customers associated with the proposed retail, residential and parking uses on the site. To the extent that emergency service providers have planned for gradual increases in service demands, no significant impacts are anticipated.

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

The project proposes spaces for additional social service resources pursuant to the existing "social contract" between the Pike Place Market and its residents.

16. Utilities

- a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other.**

- 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 immediate vicinity which might be needed.**

Utilities and providers (in parentheses) proposed for the project would include the following:

- *Water – New domestic water connection and fire service connection (Seattle Public Utilities).*
- *Sewer – New side sewer connection to combined sewer system (Seattle Public Utilities).*
- *Natural Gas – New gas service (Puget Sound Energy).*
- *Telecommunications – New telecommunications connection (Century Link, Comcast).*
- *Electrical – (Seattle City Light).*
- *Refuse/Recycling Service (Cleancescapes).*

Construction activities will include trenching and backfilling as required for installation of new underground utility services.

C. SIGNATURE

The above answers are true and complete to the best of my knowledge.

I understand the lead agency is relying on them to make its decision.

Signature:



Date submitted: November 18, 2013

This checklist was reviewed by:

Land Use Planner, Department of Planning and Development

Any comments or changes made by the Department are entered in the body of the checklist and contain the initials of the reviewer.

REFERENCES

REFERENCES

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http://waterfrontseattle.org/downloads/FINAL_ADA_April2013_WaterfrontProgramProgress_Report.pdf

APPENDIX A

Greenhouse Gas Emissions Worksheet

Pike Place Market Waterfront Entrance

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 (MTCO ₂ e)			Lifespan Emissions (MTCO ₂ e)
			Embodied	Energy	Transportation	
Single-Family Home.....	0		98	672	792	0
Multi-Family Unit in Large Building	40		33	357	766	46228
Multi-Family Unit in Small Building	0		54	681	766	0
Mobile Home.....	0		41	475	709	0
Education		0.0	39	646	361	0
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).....		18.0	39	577	247	15530
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.....		0.00				0
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Total Project Emissions:

61757

City of Seattle Department of Planning and Development
SEPA GHG Emissions Worksheet
Version 1.7 12/26/07

Introduction

The Washington State Environmental Policy Act (SEPA) requires environmental review of development proposals that may have a significant adverse impact on the environment. If a proposed development is subject to SEPA, the project proponent is required to complete the SEPA Checklist. The Checklist includes questions relating to the development's air emissions. The emissions that have traditionally been considered cover smoke, dust, and industrial and automobile emissions. With our understanding of the climate change impacts of GHG emissions, the City of Seattle requires the applicant to also estimate these emissions.

Emissions created by Development

GHG emissions associated with development come from multiple sources:

- The extraction, processing, transportation, construction and disposal of materials and landscape disturbance (Embodied Emissions)
- Energy demands created by the development after it is completed (Energy Emissions)
- Transportation demands created by the development after it is completed (Transportation Emissions)

GHG Emissions Worksheet

This GHG Emissions Worksheet has been developed to assist applicants in answering the SEPA Checklist question relating to GHG emissions. The worksheet was originally developed by King County, but the City of Seattle and King County are working together on future updates to maintain consistency of methodologies across jurisdictions.

The SEPA GHG Emissions worksheet estimates all GHG emissions that will be created over the life span of a project. This includes emissions associated with obtaining construction materials, fuel used during construction, energy consumed during a buildings operation, and transportation by building occupants.

Using the Worksheet

1. Descriptions of the different residential and commercial building types can be found on the second tabbed worksheet ("Definition of Building Types"). If a development proposal consists of multiple projects, e.g. both single family and multi-family residential structures or a commercial development that consists of more than one type of commercial activity, the appropriate information should be estimated for each type of building or activity.

2. For paving, estimate the total amount of paving (in thousands of square feet) of the project.
3. The Worksheet will calculate the amount of GHG emissions associated with the project and display the amount in the "Total Emissions" column on the worksheet. The applicant should use this information when completing the SEPA checklist.
4. The last three worksheets in the Excel file provide the background information that is used to calculate the total GHG emissions.
5. The methodology of creating the estimates is transparent; if there is reason to believe that a better estimate can be obtained by changing specific values, this can and should be done. Changes to the values should be documented with an explanation of why and the sources relied upon.
6. Print out the "Total Emissions" worksheet and attach it to the SEPA checklist. If the applicant has made changes to the calculations or the values, the documentation supporting those changes should also be attached to the SEPA checklist.

Definition of Building Types

Type (Residential) or Principal Activity (Commercial)	Description
Single-Family Home.....	Unless otherwise specified, this includes both attached and detached buildings
Multi-Family Unit in Large Building	Apartments in buildings with more than 5 units
Multi-Family Unit in Small Building	Apartments in building with 2-4 units
Mobile Home.....	
Education	Buildings used for academic or technical classroom instruction, such as elementary, middle, or high schools, and classroom buildings on college or university campuses. Buildings on education campuses for which the main use is not classroom are included in the category relating to their use. For example, administration buildings are part of "Office," dormitories are "Lodging," and libraries are "Public Assembly."
Food Sales	Buildings used for retail or wholesale of food.
Food Service	Buildings used for preparation and sale of food and beverages for consumption.
Health Care Inpatient	Buildings used as diagnostic and treatment facilities for inpatient care.
Health Care Outpatient	Buildings used as diagnostic and treatment facilities for outpatient care. Doctor's or dentist's office are included here if they use any type of diagnostic medical equipment (if they do not, they are categorized as an office building).
Lodging	Buildings used to offer multiple accommodations for short-term or long-term residents, including skilled nursing and other residential care buildings.
Retail (Other Than Mall).....	Buildings used for the sale and display of goods other than food.
Office	Buildings used for general office space, professional office, or administrative offices. Doctor's or dentist's office are included here if they do not use any type of diagnostic medical equipment (if they do, they are categorized as an outpatient health care building).
Public Assembly	Buildings in which people gather for social or recreational activities, whether in private or non-private meeting halls.
Public Order and Safety	Buildings used for the preservation of law and order or public safety.
Religious Worship	Buildings in which people gather for religious activities, (such as chapels, churches, mosques, synagogues, and temples).
Service	Buildings in which some type of service is provided, other than food service or retail sales of goods
Warehouse and Storage	Buildings used to store goods, manufactured products, merchandise, raw materials, or personal belongings (such as self-storage).
Other	Buildings that are industrial or agricultural with some retail space; buildings having several different commercial activities that, together, comprise 50 percent or more of the floorspace, but whose largest single activity is agricultural, industrial/ manufacturing, or residential; and all other miscellaneous buildings that do not fit into any other category.
Vacant	Buildings in which more floorspace was vacant than was used for any single commercial activity at the time of interview. Therefore, a vacant building may have some occupied floorspace.

Sources:

Residential 2001 Residential Energy Consumption Survey
 Square footage measurements and comparisons
<http://www.eia.doe.gov/emeu/recs/sqft-measure.html>

Commercial Commercial Buildings Energy Consumption Survey (CBECS),
 Description of CBECS Building Types
<http://www.eia.doe.gov/emeu/cbeecs/pba99/bldgtypes.html>

Embodied Emissions Worksheet

Section I: Buildings

Type (Residential) or Principal Activity (Commercial)	# thousand sq feet/ unit or building	Life span related embodied GHG missions (MTCO2e/ unit)	Life span related embodied GHG missions (MTCO2e/ thousand square feet) - See calculations in table below
Single-Family Home.....	2.53	98	39
Multi-Family Unit in Large Building	0.85	33	39
Multi-Family Unit in Small Building	1.39	54	39
Mobile Home.....	1.06	41	39
Education	25.6	991	39
Food Sales	5.6	217	39
Food Service	5.6	217	39
Health Care Inpatient	241.4	9,346	39
Health Care Outpatient	10.4	403	39
Lodging	35.8	1,386	39
Retail (Other Than Mall).....	9.7	376	39
Office	14.8	573	39
Public Assembly	14.2	550	39
Public Order and Safety	15.5	600	39
Religious Worship	10.1	391	39
Service	6.5	252	39
Warehouse and Storage	16.9	654	39
Other	21.9	848	39
Vacant	14.1	546	39

Section II: Pavement.....

All Types of Pavement.....			50
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	Columns and Beams	Intermediate Floors	Exterior Walls	Windows	Interior Walls	Roofs	Total Embodied Emissions (MTCO2e)	Total Embodied Emissions (MTCO2e/ thousand sq feet)
Average GWP (lbs CO2e/sq ft): Vancouver, Low Rise Building	5.3	7.8	19.1	51.2	5.7	21.3		
Average Materials in a 2,272-square foot single family home	0.0	2269.0	3206.0	285.0	6050.0	3103.0		
MTCO2e	0.0	8.0	27.8	6.6	15.6	30.0	88.0	38.7

Sources

All data in black text

King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

Residential floorspace per unit

2001 Residential Energy Consumption Survey (National Average, 2001)
Square footage measurements and comparisons
<http://www.eia.doe.gov/emeu/recs/sqft-measure.html>

Floorspace per building

EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Average GWP (lbs CO2e/sq ft): Vancouver, Low Rise Building

Athena EcoCalculator
Athena Assembly Evaluation Tool v2.3- Vancouver Low Rise Building
Assembly Average GWP (kg) per square meter
<http://www.athenasmi.ca/tools/ecoCalculator/index.html>
Lbs per kg 2.20
Square feet per square meter 10.76

Average Materials in a 2,272-square foot single family home

Buildings Energy Data Book: 7.3 Typical/Average Household
Materials Used in the Construction of a 2,272-Square-Foot Single-Family Home, 2000
http://buildingsdatabook.eren.doe.gov/?id=view_book_table&TableID=2036&t=xls
See also: NAHB, 2004 Housing Facts, Figures and Trends, Feb. 2004, p. 7.

Average window size

Energy Information Administration/Housing Characteristics 1993
Appendix B, Quality of the Data. Pg. 5.
<ftp://ftp.eia.doe.gov/pub/consumption/residential/rx93hcf.pdf>

Embodied GHG Emissions.....Worksheet Background Information

Buildings

Embodied GHG emissions are emissions that are created through the extraction, processing, transportation, construction and disposal of building materials as well as emissions created through landscape disturbance (by both soil disturbance and changes in above ground biomass).

Estimating embodied GHG emissions is new field of analysis; the estimates are rapidly improving and becoming more inclusive of all elements of construction and development.

The estimate included in this worksheet is calculated using average values for the main construction materials that are used to create a typical family home. In 2004, the National Association of Home Builders calculated the average materials that are used in a typical 2,272 square foot single-family household. The quantity of materials used is then multiplied by the average GHG emissions associated with the life-cycle GHG emissions for each material.

This estimate is a rough and conservative estimate; the actual embodied emissions for a project are likely to be higher. For example, at this stage, due to a lack of comprehensive data, the estimate does not include important factors such as landscape disturbance or the emissions associated with the interior components of a building (such as furniture).

King County realizes that the calculations for embodied emissions in this worksheet are rough. For example, the emissions associated with building 1,000 square feet of a residential building will not be the same as 1,000 square feet of a commercial building. However, discussions with the construction community indicate that while there are significant differences between the different types of structures, this method of estimation is reasonable; it will be improved as more data become available.

Additionally, if more specific information about the project is known, King County recommends two online embodied emissions calculators that can be used to obtain a more tailored estimate for embodied emissions: www.buildcarbonneutral.org and www.athenasmi.ca/tools/ecoCalculator/.

Pavement

Four recent life cycle assessments of the environmental impacts of roads form the basis for the per unit embodied emissions of pavement. Each study is constructed in slightly different ways; however, the aggregate results of the reports represent a reasonable estimate of the GHG emissions that are created from the manufacture of paving materials, construction related emissions, and maintenance of the pavement over its expected life cycle. For specifics, see the worksheet.

Special Section: Estimating the Embodied Emissions for Pavement

Four recent life cycle assessments of the environmental impacts of roads form the basis for the per unit embodied emissions of pavement. Each study is constructed in slightly different ways; however, the aggregate results of the reports represent a reasonable estimate of the GHG emissions that are created from the manufacture of paving materials, construction related emissions, and maintenance of the pavement over its expected life cycle.

The results of the studies are presented in different units and measures; considerable effort was undertaken to be able to compare the results of the studies in a reasonable way. For more details about the below methodology, contact matt.kuharic@kingcounty.gov.

The four studies, Meil (2001), Park (2003), Stripple (2001) and Treolar (2001) produced total GHG emissions of 4-34 MTCO₂e per thousand square feet of finished paving (for similar asphalt and concrete based pavements). This estimate does not including downstream maintenance and repair of the highway. The average (for all concrete and asphalt pavements in the studies, assuming each study gets one data point) is ~17 MTCO₂e/thousand square feet.

Three of the studies attempted to thoroughly account for the emissions associated with long term maintenance (40 years) of the roads. Stripple (2001), Park et al. (2003) and Treolar (2001) report 17, 81, and 68 MTCO₂e/thousand square feet, respectively, after accounting for maintenance of the roads.

Based on the above discussion, King County makes the conservative estimate that 50 MTCO₂e/thousand square feet of pavement (over the development's life cycle) will be used as the embodied emission factor for pavement until better estimates can be obtained. This is roughly equivalent to 3,500 MTCO₂e per lane mile of road (assuming the lane is 13 feet wide).

It is important to note that these studies estimate the embodied emissions for roads. Paving that does not need to stand up to the rigors of heavy use (such as parking lots or driveways) would likely use less materials and hence have lower embodied emissions.

Sources:

Meil, J. A Life Cycle Perspective on Concrete and Asphalt Roadways: Embodied Primary Energy and Global Warming Potential. 2006. Available:

[http://www.cement.ca/cement.nsf/eee9ec7bbd630126852566c40052107b/6ec79dc8ae03a782852572b90061b914/\\$FILE/ATTK0WE3/athena%20report%20Feb.%202%202007.pdf](http://www.cement.ca/cement.nsf/eee9ec7bbd630126852566c40052107b/6ec79dc8ae03a782852572b90061b914/$FILE/ATTK0WE3/athena%20report%20Feb.%202%202007.pdf)

Park, K, Hwang, Y., Seo, S., M.ASCE, and Seo, H. , "Quantitative Assessment of Environmental Impacts on Life Cycle of Highways," Journal of Construction Engineering and Management , Vol 129, January/February 2003, pp 25-31, (DOI: 10.1061/(ASCE)0733-9364(2003)129:1(25)).

Stripple, H. Life Cycle Assessment of Road. A Pilot Study for Inventory Analysis. Second Revised Edition. IVL Swedish Environmental Research Institute Ltd. 2001. Available: <http://www.ivl.se/rapporter/pdf/B1210E.pdf>

Treolar, G., Love, P.E.D., and Crawford, R.H. Hybrid Life-Cycle Inventory for Road Construction and Use. Journal of Construction Engineering and Management. P. 43-49. January/February 2004.

Energy Emissions Worksheet

Type (Residential) or Principal Activity (Commercial)	Energy consumption per building per year (million Btu)	Carbon Coefficient for Buildings	MTCO2e per building per year	Floorspace per Building (thousand square feet)	MTCE per thousand square feet per year	MTCO2e per thousand square feet per year	Average Building Life Span	Lifespan Energy Related MTCO2e emissions per unit	Lifespan Energy Related MTCO2e emissions per thousand square feet
Single-Family Home.....	107.3	0.108	11.61	2.53	4.6	16.8	57.9	672	266
Multi-Family Unit in Large Building	41.0	0.108	4.44	0.85	5.2	19.2	80.5	357	422
Multi-Family Unit in Small Building	78.1	0.108	8.45	1.39	6.1	22.2	80.5	681	489
Mobile Home.....	75.9	0.108	8.21	1.06	7.7	28.4	57.9	475	448
Education	2,125.0	0.124	264.2	25.6	10.3	37.8	62.5	16,526	646
Food Sales	1,110.0	0.124	138.0	5.6	24.6	90.4	62.5	8,632	1,541
Food Service	1,436.0	0.124	178.5	5.6	31.9	116.9	62.5	11,168	1,994
Health Care Inpatient	60,152.0	0.124	7,479.1	241.4	31.0	113.6	62.5	467,794	1,938
Health Care Outpatient	985.0	0.124	122.5	10.4	11.8	43.2	62.5	7,660	737
Lodging	3,578.0	0.124	444.9	35.8	12.4	45.6	62.5	27,826	777
Retail (Other Than Mall).....	720.0	0.124	89.5	9.7	9.2	33.8	62.5	5,599	577
Office	1,376.0	0.124	171.1	14.8	11.6	42.4	62.5	10,701	723
Public Assembly	1,338.0	0.124	166.4	14.2	11.7	43.0	62.5	10,405	733
Public Order and Safety	1,791.0	0.124	222.7	15.5	14.4	52.7	62.5	13,928	899
Religious Worship	440.0	0.124	54.7	10.1	5.4	19.9	62.5	3,422	339
Service	501.0	0.124	62.3	6.5	9.6	35.1	62.5	3,896	599
Warehouse and Storage	764.0	0.124	95.0	16.9	5.6	20.6	62.5	5,942	352
Other	3,600.0	0.124	447.6	21.9	20.4	74.9	62.5	27,997	1,278
Vacant	294.0	0.124	36.6	14.1	2.6	9.5	62.5	2,286	162

Sources

All data in black text

King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

Energy consumption for residential buildings

2007 Buildings Energy Data Book: 6.1 Quad Definitions and Comparisons (National Average, 2001)
 Table 6.1.4: Average Annual Carbon Dioxide Emissions for Various Functions
<http://buildingsdatabook.eren.doe.gov/>
 Data also at: http://www.eia.doe.gov/emeu/recs/recs2001_ce/ce1-4c_housingunits2001.html

Energy consumption for commercial buildings and Floorspace per building

EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)
 Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

Note: Data in plum color is found in both of the above sources (buildings energy data book and commercial buildings energy consumption survey).

Carbon Coefficient for Buildings

Buildings Energy Data Book (National average, 2005)
 Table 3.1.7. 2005 Carbon Dioxide Emission Coefficients for Buildings (MMTCE per Quadrillion Btu)
http://buildingsdatabook.eere.energy.gov/?id=view_book_table&TableID=2057
 Note: Carbon coefficient in the Energy Data book is in MTCE per Quadrillion Btu.
 To convert to MTCO2e per million Btu, this factor was divided by 1000 and multiplied by 44/12.

Residential floorspace per unit

2001 Residential Energy Consumption Survey (National Average, 2001)
 Square footage measurements and comparisons
<http://www.eia.doe.gov/emeu/recs/sqft-measure.html>

average life span of buildings,
estimated by replacement time method

	Single Family Homes	Multi-Family Units in Large and Small Buildings	All Residential Buildings
New Housing Construction, 2001	1,273,000	329,000	1,602,000
Existing Housing Stock, 2001	73,700,000	26,500,000	100,200,000
Replacement time:	57.9	80.5	62.5

(national average, 2001)

Note: Single family homes calculation is used for mobile homes as a best estimate life span.

Note: At this time, KC staff could find no reliable data for the average life span of commercial buildings.

Therefore, the average life span of residential buildings is being used until a better approximation can be ascertained.

Sources:

New Housing Construction,

2001 Quarterly Starts and Completions by Purpose and Design - US and Regions (Excel)
http://www.census.gov/const/quarterly_starts_completions_cust.xls
 See also: <http://www.census.gov/const/www/newresconstindex.html>

Existing Housing Stock,

2001 Residential Energy Consumption Survey (RECS) 2001
 Tables HC1:Housing Unit Characteristics, Million U.S. Households 2001
 Table HC1-4a. Housing Unit Characteristics by Type of Housing Unit, Million U.S. Households, 2001
 Million U.S. Households, 2001
http://www.eia.doe.gov/emeu/recs/recs2001/hc_pdf/housunits/hc1-4a_housingunits2001.pdf

Transportation Emissions Worksheet

Type (Residential) or Principal Activity (Commercial)	# people/ unit or building	# thousand sq feet/ unit or building	# people or employees/ thousand square feet	vehicle related GHG emissions (metric tonnes CO2e per person per year)	MTCO2e/ year/ unit	MTCO2e/ year/ thousand square feet	Average Building Life Span	Life span transportation related GHG emissions (MTCO2e/ per unit)	Life span transportation related GHG emissions (MTCO2e/ thousand sq feet)
Single-Family Home.....	2.8	2.53	1.1	4.9	13.7	5.4	57.9	792	313
Multi-Family Unit in Large Building	1.9	0.85	2.3	4.9	9.5	11.2	80.5	766	904
Multi-Family Unit in Small Building	1.9	1.39	1.4	4.9	9.5	6.8	80.5	766	550
Mobile Home.....	2.5	1.06	2.3	4.9	12.2	11.5	57.9	709	668
Education	30.0	25.6	1.2	4.9	147.8	5.8	62.5	9247	361
Food Sales	5.1	5.6	0.9	4.9	25.2	4.5	62.5	1579	282
Food Service	10.2	5.6	1.8	4.9	50.2	9.0	62.5	3141	561
Health Care Inpatient	455.5	241.4	1.9	4.9	2246.4	9.3	62.5	140506	582
Health Care Outpatient	19.3	10.4	1.9	4.9	95.0	9.1	62.5	5941	571
Lodging	13.6	35.8	0.4	4.9	67.1	1.9	62.5	4194	117
Retail (Other Than Mall).....	7.8	9.7	0.8	4.9	38.3	3.9	62.5	2394	247
Office	28.2	14.8	1.9	4.9	139.0	9.4	62.5	8696	588
Public Assembly	6.9	14.2	0.5	4.9	34.2	2.4	62.5	2137	150
Public Order and Safety	18.8	15.5	1.2	4.9	92.7	6.0	62.5	5796	374
Religious Worship	4.2	10.1	0.4	4.9	20.8	2.1	62.5	1298	129
Service	5.6	6.5	0.9	4.9	27.6	4.3	62.5	1729	266
Warehouse and Storage	9.9	16.9	0.6	4.9	49.0	2.9	62.5	3067	181
Other	18.3	21.9	0.8	4.9	90.0	4.1	62.5	5630	257
Vacant	2.1	14.1	0.2	4.9	10.5	0.7	62.5	657	47

Sources

All data in black text

King County, DNRP. Contact: Matt Kuharic, matt.kuharic@kingcounty.gov

people/ unit

Estimating Household Size for Use in Population Estimates (WA state, 2000 average)
 Washington State Office of Financial Management
 Kimpel, T. and Lowe, T. Research Brief No. 47. August 2007
<http://www.ofm.wa.gov/researchbriefs/brief047.pdf>
 Note: This analysis combines Multi Unit Structures in both large and small units into one category; the average is used in this case although there is likely a difference

Residential floorspace per unit

2001 Residential Energy Consumption Survey (National Average, 2001)
 Square footage measurements and comparisons
<http://www.eia.doe.gov/emeu/recs/sqft-measure.html>

employees/thousand square feet

Commercial Buildings Energy Consumption Survey commercial energy uses and costs (National Median, 2003)
 Table B2 Totals and Medians of Floorspace, Number of Workers, and Hours of Operation for Non-Mall Buildings, 2003
http://www.eia.doe.gov/emeu/cbeecs/cbeecs2003/detailed_tables_2003/2003set1/2003excel/b2.xls

Note: Data for # employees/thousand square feet is presented by CBECS as square feet/employee.
 In this analysis employees/thousand square feet is calculated by taking the inverse of the CBECS number and multiplying by 1000.

vehicle related GHG emissions

Estimate calculated as follows (Washington state, 2006)_

56,531,930,000 2006 Annual WA State Vehicle Miles Traveled

Data was daily VMT. Annual VMT was 365*daily VMT.

<http://www.wsdot.wa.gov/mapsdata/tdo/annualmileage.htm>

6,395,798 2006 WA state population

<http://quickfacts.census.gov/qfd/states/53000.html>

8839 vehicle miles per person per year

0.0506 gallon gasoline/mile

This is the weighted national average fuel efficiency for all cars and 2 axle, 4 wheel light trucks in 2005. This includes pickup trucks, vans and SUVs. The 0.051 gallons/mile used here is the inverse of the more commonly known term "miles/per gallon" (which is 19.75 for these cars and light trucks).

Transportation Energy Data Book. 26th Edition. 2006. Chapter 4: Light Vehicles and Characteristics. Calculations based on weighted average MPG efficiency of cars and light trucks.

http://cta.ornl.gov/data/tedb26/Edition26_Chapter04.pdf

Note: This report states that in 2005, 92.3% of all highway VMT were driven by the above described vehicles.

http://cta.ornl.gov/data/tedb26/Spreadsheets/Table3_04.xls

24.3 lbs CO2e/gallon gasoline

The CO2 emissions estimates for gasoline and diesel include the extraction, transport, and refinement of petroleum as well as their combustion.

Life-Cycle CO2 Emissions for Various New Vehicles. RENew Northfield.

Available: <http://renewnorthfield.org/wpcontent/uploads/2006/04/CO2%20emissions.pdf>

Note: This is a conservative estimate of emissions by fuel consumption because diesel fuel, with a emissions factor of 26.55 lbs CO2e/gallon was not estimated.

2205

4.93 lbs/metric tonne

vehicle related GHG emissions (metric tonnes CO2e per person per year)

average life span of buildings, estimated by replacement time method

See Energy Emissions Worksheet for Calculations

Commercial floorspace per unit

EIA, 2003 Commercial Buildings Energy Consumption Survey (National Average, 2003)

Table C3. Consumption and Gross Energy Intensity for Sum of Major Fuels for Non-Mall Buildings, 2003

http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/2003set9/2003excel/c3.xls

APPENDIX B

Transportation Impact Analysis

TECHNICAL MEMORANDUM

Project: Pike Place Market Waterfront Entrance

Subject: Traffic and Access Analysis

Date: November 13, 2013

Authors: Tod S. McBryan, P.E. 
Marni C. Heffron, P.E., P.T.O.E.

This memorandum presents traffic and access analysis for the proposed new Pike Place Market Waterfront Entrance project, which consists of a mixed-use building and parking garage at the Pike Place Market. This analysis is intended to support the SEPA review and MUP application for the project. This memorandum presents the methodology applied to forecast future traffic generated by the proposed development, data collected in the area, and operations analyses of site access and key nearby intersections. The analyses present results for a long-term year 2030 conditions with the Elliott-Western Connector roadway project complete. Also presented are interim conditions that would exist while the SR 99 Bored Tunnel, Seattle Waterfront and Sea Wall Replacement project, and the Elliott-Western Connector are still under construction.

1. Background

The Pike Place Market (PPM) Preservation & Development Authority (PDA) proposes to construct a mixed-use building at 1501 Western Avenue. The project would include a four-story below-grade parking garage with 302 parking spaces and an above-grade building with retail and residential components. The above-grade building would contain 40 income-qualified housing units, 2,200 square feet (sf) of retail space, and 16,400 sf of retail/restaurant space. The project site is now occupied by a surface parking lot (84 spaces). The new garage proposes a full-access driveway on Western Avenue, and in the future, a second right-in/right-out only driveway on the proposed Elliott-Western Connector that will be located in the footprint of the current Alaskan Way Viaduct.

The mixed-use building and new PPM garage will be located immediately adjacent to and north of the existing PPM garage (located at 1531 Western Avenue). The existing PPM garage has 529 parking spaces and two access driveways on Western Avenue (one exit only and one full access), as well as access at the lower level to Alaskan Way toward the west. There will be an internal connection between level P-3 of the new PPM garage and the existing PPM garage. The northern exit-only driveway on Western Avenue that currently serves the existing PPM garage will be eliminated to provide a new pedestrian corridor. During demolition of the Alaskan Way Viaduct and subsequent construction of the Elliott-Western Connector, all access to the existing and proposed new PPM parking garages would occur from two driveways on Western Avenue—the new driveway serving the new garage and the existing south driveway serving the existing PPM garage. The existing PPM garage access that connects to Alaskan Way is not expected to be available during the interim period; this access route will be changed in the future to connect into the south side of the garage and connect to the new surface Alaskan Way at Pine Street. The Elliott-Western Connector intersection at Pine Street is planned to be signalized. The new garage's driveway on the Elliott-Western Connector will be open once that new roadway is complete. The proposed project is depicted in Figure 1 (attached).

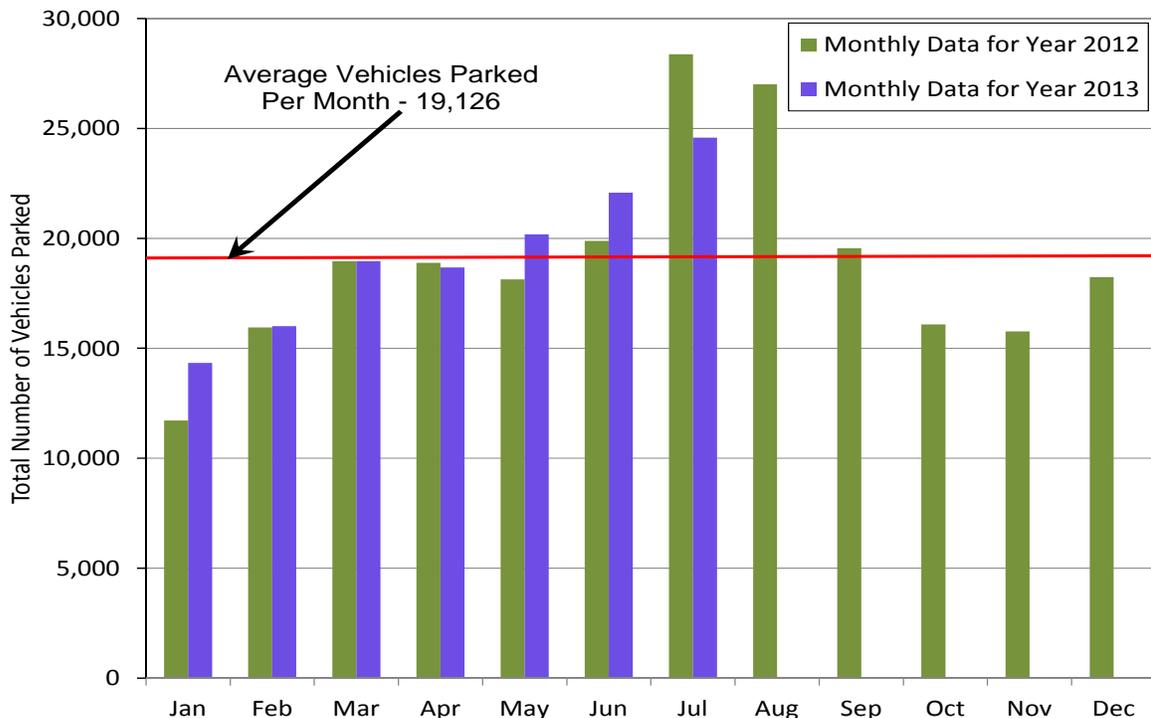
2. Analysis Methodology

Since the proposed mixed-use project would include a parking garage with 302 spaces that would serve multiple uses in the vicinity of Pike Place Market and the Seattle Waterfront, the traffic estimates used to evaluate garage access were based on traffic volumes and patterns derived from data collected at the existing PPM parking garage. The traffic generation rates derived would account for all of the traffic that could be generated by the mixed-use components of the proposed project as well as traffic generated by other attractions in the vicinity that would make use of the new parking garage.

3. Existing PPM Garage Traffic and Seasonal Fluctuation

The PPMPDA provided detailed access gate data for the existing PPM garage. Data documenting the total number of vehicles parked were provided for the period from January 2012 through July 2013. The number of vehicles for each month is summarized in Figure 1. As shown, the existing garage has an average of about 19,125 vehicle parked per month with peak activity over the summer months of July and August. July is the peak month for activity at the garage and was 29% higher than the average in 2013 and 48% higher than average in 2012. Based on these analyses, parking demand data for July 2013 was selected for additional analysis of access and potential traffic impacts of the new PPM garage.

Figure 1. PPM Garage Monthly Parking Data

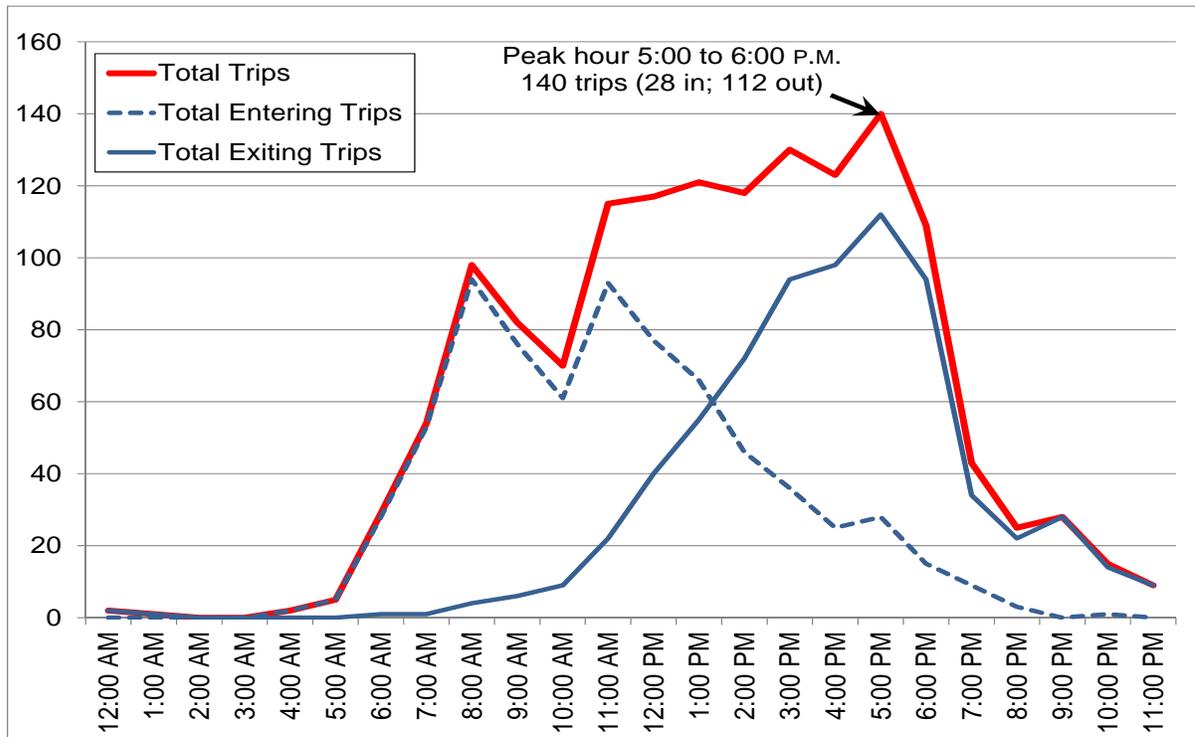


Source: Pike Place Market Garage. Compiled by Heffron Transportation, Inc. September 2013.

The PPMPDA provided detailed hourly parking garage access data for the entire month of July 2013. The data included total number of entering and exiting vehicles for each of the access points—two entries (from Western Avenue and Alaskan Way) and three exits (two on Western Avenue and one on Alaskan Way). The data were compiled to determine the peak week in July, which was determined to be July 20 through 26. The weekday hourly data were compiled to determine the number of arrivals and departures on the average weekday during this peak week of the peak month. The hourly

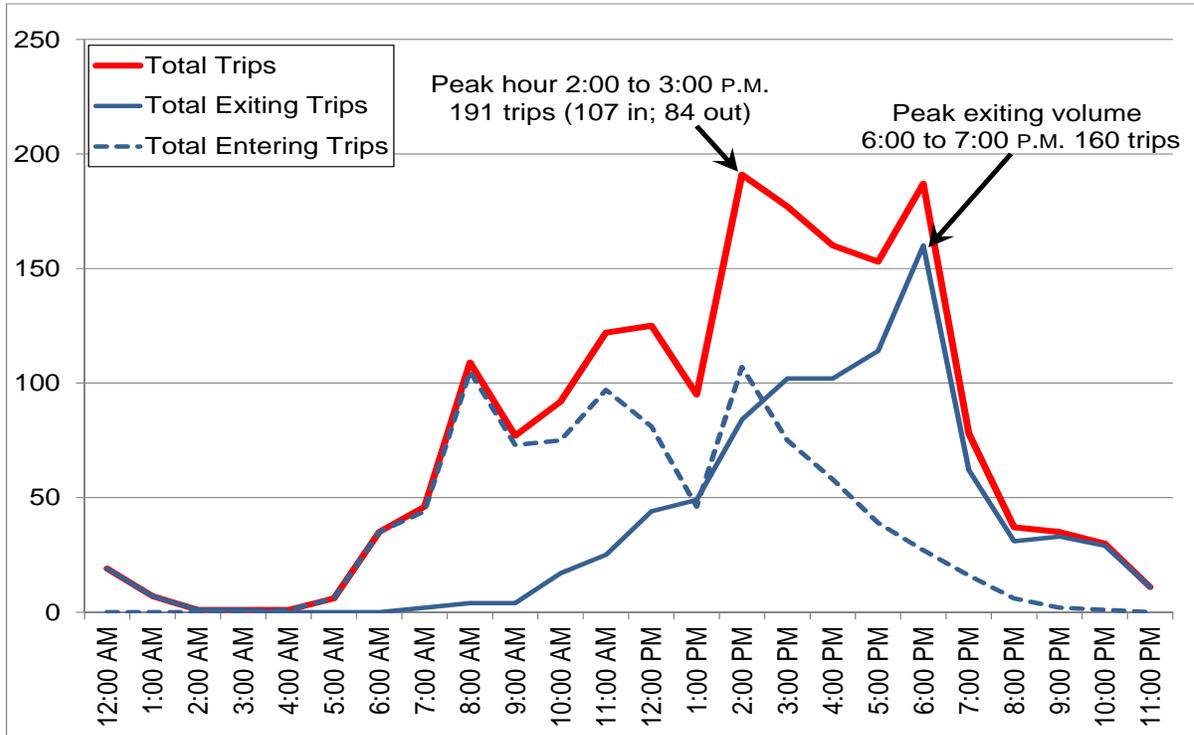
Saturday data for July 20, 2013 was also compiled to reflect the peak weekend day patterns. Figure 2 shows the average weekday (peak week/peak month) arrival and departure patterns for vehicles at the existing PPM garage. As shown, the peak hour occurs from 5:00 to 6:00 P.M. and overlaps the peak hour of the adjacent roadway network. On Saturday, the peak hour trips are higher (191 trips) and occur earlier (2:00 to 3:00 P.M.). The highest volume of exiting traffic occurred on Saturday from 6:00 to 7:00 P.M. when 160 vehicles exited the garage. Figure 3 shows the Saturday arrival and departure patterns at the PPM garage.

Figure 2. Existing PPM Garage Average Weekday Trip Generation – July 22 to 26, 2013



Source: Pike Place Market Garage. Compiled by Heffron Transportation, Inc. September 2013.

Figure 3. Existing PPM Garage Saturday Trip Generation – July 20, 2013



Source: Pike Place Market Garage. Compiled by Heffron Transportation, Inc. September 2013.

Based on these analyses, trip generation rates for the PPM garage were developed. The rates—determined as the number of trips generated per parking stall—are summarized below.

Average Weekday PM Peak Hour (Peak Week/Peak Month) = 0.265 trips per stall
(20% entering, 80% exiting)

Saturday Peak Hour (Peak Week/Peak Month) = 0.361 trips per stall
(56% entering, 44% exiting)

4. Future Pike Place Market Waterfront Entrance Trip Estimates

The trip generation rates presented in the previous section were used to estimate trip generation for the proposed new PPM garage and the mixed-use development that the garage will support. As described above, this is a reasonable approach since the parking garage will also be used by customers of the larger Pike Place Market and visitors to the waterfront. In addition, since access at the existing garage would be affected in the interim and in the long term by the construction of the Elliott-Western Connector, the trip generation rates were applied to both the existing and the proposed new garage so that total PPM garage traffic could be reassigned to the adjacent roadway network for interim and long-term conditions. Table 1 presents the trip generation estimates for both the existing and proposed new garage. These forecasts were used to evaluate weekday PM peak hour conditions, since this is the time that is expected to have the highest combination of traffic flows exiting the garage and highest traffic volumes on adjacent streets.

Table 1. PPM Garage Trip Generation Estimates – Peak Season

Garage Components	Weekday Daily Trips	Weekday PM Peak Hour (Peak Week/Peak Month)			Saturday Daily Trips	Saturday Peak Hour (Peak Week/Peak Month)		
		In	Out	Total		In	Out	Total
Existing PPM Garage (529 spaces)	720	28	112	140	900	107	84	191
Proposed New PPM Garage (302 spaces)	410	16	64	80	510	61	48	109
Total PPM Garages (831 spaces)	1,130	44	176	220	1,410	168	132	300

Source: Heffron Transportation, Inc., September 2013. Trip generation values represent conditions during the peak week of the peak month (July).

5. Interim Access Operations

As described previously, during demolition of the Alaskan Way Viaduct and subsequent construction of the Elliott-Western Connector, all access to the existing and proposed new PPM parking garages would occur from two driveways on Western Avenue. Therefore, all peak hour traffic generated at the two garages was assigned to the two site access driveways on Western Avenue. The assignments were allocated based on the number of stalls in each garage—36% to the new north PPM garage and access, 64% to the existing PPM garage and south access.

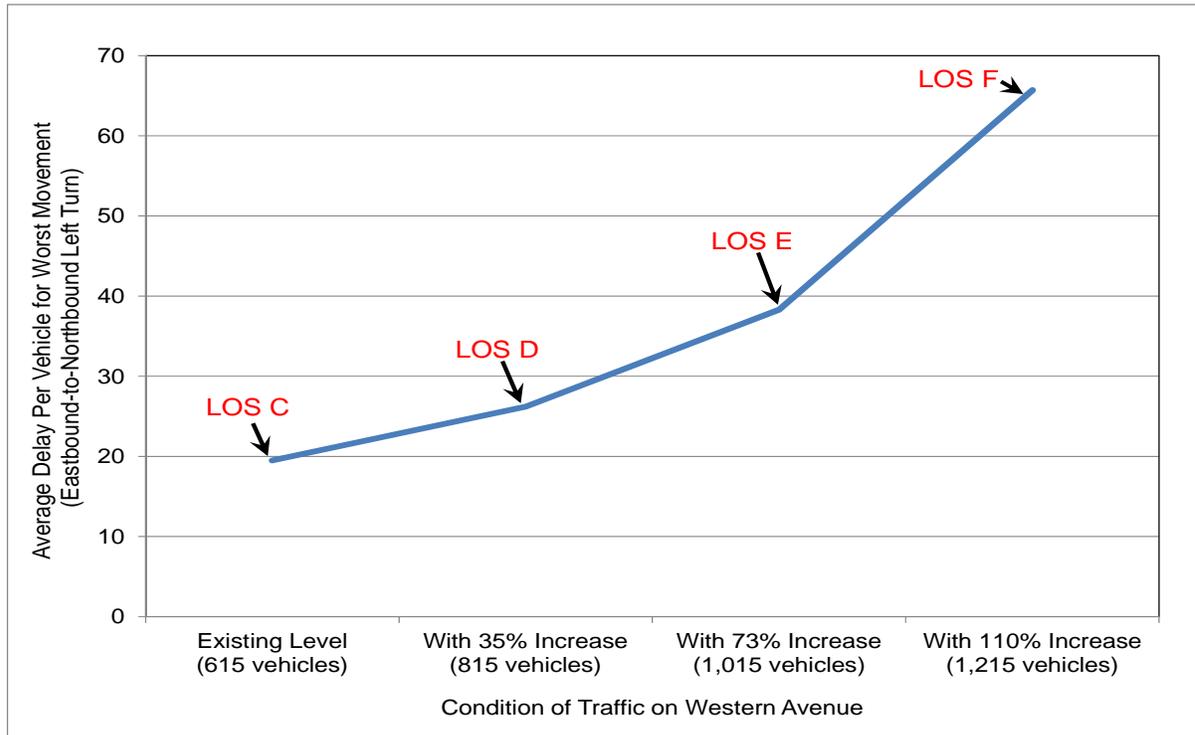
A range of possible traffic volume conditions on Western Avenue was tested. This is because, during this interim period, construction-related traffic detours could result in fluctuations of traffic volumes on Western Avenue. The Construction Traffic Management Plans for the Alaskan Way Viaduct demolition and Elliott-Western Connector construction efforts have not yet been developed and traffic forecasts for these interim conditions on Western Avenue are not available from the City of Seattle. Therefore, to test the range of possible conditions, traffic volumes on Western Avenue were incrementally increased from current levels. To assist with this analysis, a new site PM peak period turning movement count was performed at the existing PPM garage south access on Western Avenue on Tuesday, September 10, 2013.

The recent count indicates that Western Avenue carries about 600 trips (345 southbound, 265 northbound) during the PM peak hour from 4:30 to 5:30 P.M. To test the sensitivity of site access operations to increases in traffic on Western Avenue, these volumes were increased by increments of 200 trips (100 in each direction). Since the south driveway would serve as access to the largest number of stalls, it would also serve the largest number of garage trips. Therefore, this access is expected to have higher delays than the proposed new access that would serve the new PPM garage. The worst operating movement at this access would be the westbound-to-northbound left turn from the garage access to Western Avenue.

The results of the sensitivity analysis are summarized in Figure 4. As shown, the westbound-to-northbound left turn would operate at LOS C or better during interim conditions, if volumes on Western Avenue remain at existing (2013) levels. However, if traffic increases on Western Avenue, the delay and LOS of this movement would be degraded. An increase in Western Avenue traffic of 110% would cause the driveway to degrade to LOS F conditions. With this level of traffic increase on Western Avenue, operations at the all-way-stop intersection of Western Avenue/Virginia Street to the north would also likely be severely degraded. This could result in northbound queues that extend to or past the PPM garage access driveways. If this were to occur, drivers exiting the garage would likely

elect to turn right and find other ways to reach destinations to the north. The PPM would monitor operations at the access and along Western Avenue and could implement peak hour restrictions on left-turns from the garage access driveways so that the egress would remain clear.

Figure 4. Peak Peak Hour Delay and Level of Service Sensitivity at South PPM Garage Access to Western Avenue During Interim Conditions



Source: Heffron Transportation, Inc. September 2013.

6. Long-Term Access Operations

Traffic operations at the site access driveways were also evaluated for long-term conditions after the Alaskan Way Viaduct demolition is complete and the Elliott-Western Connector is constructed and operating. The traffic forecasts and operations model developed for the Seattle Central Waterfront project for the year 2030 were obtained from the City’s traffic consultant.¹ These forecasts and model were adjusted to reflect conditions with the proposed PPM garage project. The PM peak hour trip estimates presented previously and reflecting the peak week/peak month conditions were assigned to the proposed site access driveways. Table 2 presents a summary of the assumed distribution patterns for PPM garage trips.

¹ Parametrix, 2013.

Table 2. Pike Place Market Waterfront Entrance Trip Distribution Pattern

Route / Access Location	Inbound %		Outbound %	
	From North	From South	To North	To South
Elliott-Western Connector				
New PPM Garage Driveway (right-in/right-out only)	0%	11%	20%	0%
Existing PPM Garage New Access at Signal at Pike Street	16%	14%	35%	5%
Western Avenue				
New PPM Garage Driveway	11%	9%	5%	9%
Existing PPM Garage South Driveway	23%	16%	10%	16%
Total Distribution	50%	50%	70%	30%

All of the trips that enter and exit the two PPM garages were reassigned to the planned access points and the adjacent roadway network. The net increase in trips was combined with the forecast 2030 background traffic forecasts provided by the City’s consultant. The future with-project traffic volumes were then used to evaluate traffic operations at the site access driveways. The analysis results are presented in Table 3. As shown, the three signals closest to the site are forecast to operate at LOS D or better with the proposed new PPM mixed-use project. In addition, all movements at the three unsignalized site access driveway locations would operate at LOS C or better.

The Western Avenue / Virginia Street intersection would operate at LOS E without or with the project. In April 2013, the Seattle Department of Transportation evaluated the potential of signaling the Western Avenue/Virginia Street intersection in response to a request by neighborhood stakeholders. The request was made to improve traffic flow on the Western Avenue to better accommodate the potential future traffic diversion that could occur during Alaskan Way Viaduct demolition and/or reconstruction of Alaskan Way and the Elliott-Western Connector. SDOT reviewed traffic volumes, pedestrian volumes, collision records, and traffic operations and concluded that the existing all-way stop control should remain at the intersection because it provides the best operations and safety for pedestrians at this location. A presentation by Dongho Chang, the City’s Traffic Engineer, to the PPMPPDA based this decision on the following conclusions:

- With an all-way stop, pedestrians have the highest service level, and have little or no delay when crossing. All vehicles come to a stop, ensuring the safest crossing. If the intersection were signalized, pedestrians would have to wait for the signal, creating crowding at the crosswalk landings.
- Traffic speeds are low due to the all-way stop and pedestrian crossing activity. Lower speeds encourage bicycle usage at Pike Place Market. If the intersection were signalized, vehicles speeds would increase as vehicles flow through the intersection on a green light.
- Lower traffic speeds and easy pedestrian crossings afforded by the all-way stop better integrate the Pike Place Market and Victor Steinbrueck Park.

Therefore, no changes in operation of this intersection are recommended to improve vehicular level of service. The pedestrian safety and operational needs would continue to be the highest priority even with the proposed new Pike Place Market Waterfront Entrance project.

Table 3. Level of Service Summary - Forecast 2030-Without- and With-Project Conditions

	Commuter PM Peak Hour			
	2030 w/o project		2030 w/ project	
	LOS ¹	Delay ²	LOS	Delay
Signalized Intersection				
Western Avenue / Lenora Street	D	48.1	D	54.8
Elliott-Western Conn. / Pike St / Existing PPM Garage Access	A	5.7	A	5.8
Elliott-Western Conn. / Alaskan Way N	C	31.1	C	31.1
Stop Controlled	LOS	Delay	LOS	Delay
Western Ave / New PPM Garage Access (overall)		n/a ³	A	0.7
Northbound Left Turns			A	9.3
Eastbound Turns			C	19.0
Western Ave / Existing PPM Garage South Access (overall)	A	0.8	A	0.8
Northbound Left Turn	A	9.3	A	9.3
Eastbound Turns	C	19.4	C	19.8
Elliott-Western Conn. / New PPM Garage Access (overall)		n/a ³	A	0.3
Westbound Turns			B	13.3
All-Way-Stop Controlled³	LOS	Delay	LOS	Delay
Western Avenue / Virginia Street	E	41.5	E	41.5

Source: Heffron Transportation, Inc., September 2013.

1. Level of service.
2. Average seconds of delay per vehicle.
3. n/a = Not Applicable – Access intersection would not exist without project.

7. Parking

The proposed project would increase parking capacity in the vicinity of Pike Place Market and Seattle Central Waterfront. It will help to replace some of the public parking supply that will be lost during demolition of the Alaskan Way Viaduct and is expected to improve parking conditions for the area.

8. Findings and Conclusions

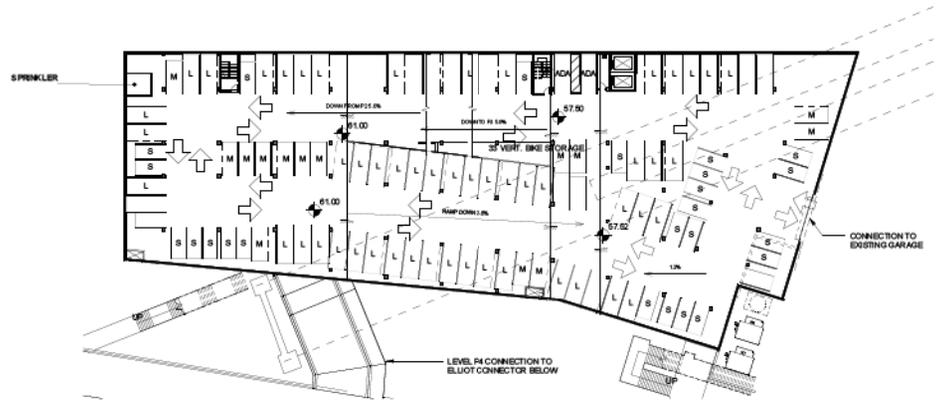
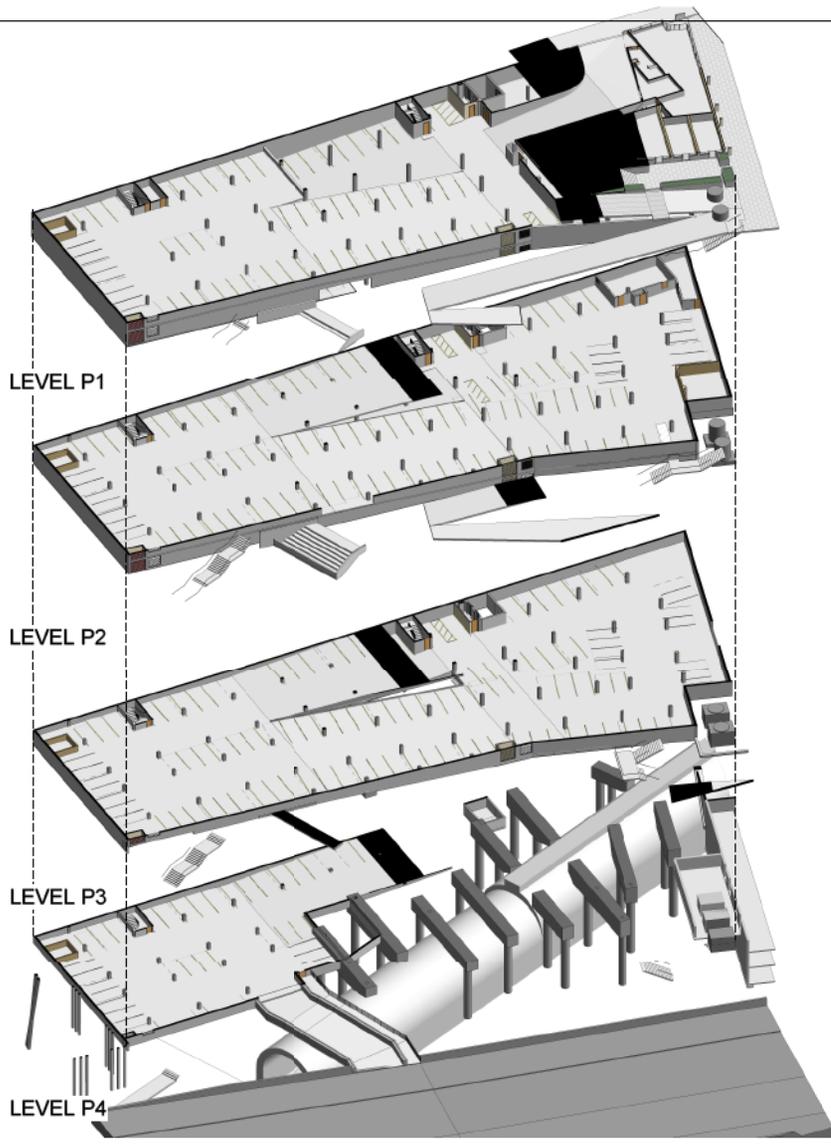
Based on the analysis presented above, the proposed Pike Place Market Waterfront Entrance project is not expected to result in any adverse impacts to traffic or parking.

During demolition of the Alaskan Way Viaduct and subsequent construction of the Elliott-Western Connector, all access to the existing and proposed new PPM parking garages would occur from two driveways on Western Avenue. If traffic increases on Western Avenue due to construction activities along the Waterfront, the delay and LOS of the site access driveways would be degraded. The PPM would monitor operations at the access and along Western Avenue and could implement peak hour restrictions on left-turns from the garage access driveways so that the egress would remain clear.

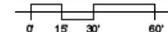
Attachment: Site Plan

TSM/tsm

PPM Parking Garage Traffic Analysis - FINAL.docx



TYPICAL PARKING LEVEL



Parking Space Dimensions
 L - "Large vehicle" 8'-6" x 19'-0"
 M - "Medium vehicle" 8'-0" x 16'-0"
 S - "Small vehicle" 7'-6" x 15'-0"

ADA Required Stalls: 8 total 1 being a ADA Van stall
 ADA - 8'-0" x 19'-0" with 5'-0" wide adjacent access aisle.
 ADA VAN - 8'-0" x 19'-0" with 8'-0" wide adjacent access aisle. Allow 114" height clearance

Vertical bike storage for 66 bikes is provided on levels P1 and P2

PARKING SPACES PER LEVEL	
Level	Count
P1	67
P2	92
P3	116
P4	27
Grand total:	302

PARKING SPACES BY TYPE	
Type Mark	Count
ADA	7
ADA VAN	1
L	183
M	43
S	68

NO.	DESCRIPTION	DATE

Issue Date: AUGUST 2, 2013
 Drawn: -
 Checked: -
 M/H Project No.: 1299

Pike Place Market Waterfront Entrance

1901 WESTERN AVENUE | SEATTLE, WA 98101

100% SCHEMATIC DESIGN
 AUGUST 2, 2013

ARCHITECT The Miller Hull Partnership, LLP Architecture and Planning Pilchuck Building 71 Columbia Street Seattle, WA 98104 Phone: 206.852.6857 Fax: 206.852.5902	SHEET PARKING SUMMARY G-006
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3/27/13 1:38:18 PM
 C:\Users\paul.miller\Documents\Projects\Pike Place Market\PPM_P1_Cutaway_0313.rvt

APPENDIX C

Tree Inventory

Memorandum

TO: Justine Kim, Shiels Obletz Johnsen
JOB SITE: Parking Lot at 1901 Western Ave. Seattle
REGARDING: Tree Inventory
FROM: Sean Dugan, ISA Board Certified Master Arborist PN-5459B
DATE: November 4, 2013

This memo outlines the findings developed during my site visit on November 1, 2013. I was asked to assess the trees at the jobsite to determine if any meet the city of Seattle's definition of an Exceptional tree as stated in the Director's rule 16-2008. Based on my findings none of the four trees meet the City's definition.

Observations and Discussion

Four trees are located on or adjacent to the subject property, which species include Mimosa (*Albizia julibrissin*), Red alder (*Alnus rubra*), Flowering cherry (*Prunus sargentii*), and a Yucca (*Yucca spp.*) tree. The Mimosa and Yucca were easily accessible. There was no access to the base of the Alder or the Cherry tree. (see Aerial Photograph)

The Mimosa tree is in fair health and structure. There are two trunks with a narrow angle junction that has included bark. I measured the trunks to be eight and six inches across. The single stem equivalent of the tree is ten inches. This is below the Exceptional size threshold.

I measured the trunk diameter of the Yucca to be 4.6 inches across. The Yucca tree is not found in either of the resources the City requires be used as stated in the Director's rule for determining the minimum size threshold. Since no size is found in these resources a diameter of 30 inches is the minimum threshold. This tree is below the Exceptional size threshold.

I was unable to assess the base of the Red alder tree. I estimate the trunk diameter to be approximately 28 inches across. The Director's Rule states that Red alder is not an Exceptional tree unless it is part of a Grove. This tree is not part of a grove and is therefore not Exceptional.

I was unable to assess the base of the Flowering cherry tree. I estimate the trunk diameter to be approximately 18 inches across. The Director's Rule states that for Flowering cherry trees the minimum size threshold to be considered an Exceptional tree is 23 inches across. This tree is below the Exceptional size threshold.

The top of the tree appears to have failed in the past and three moderate diameter scaffold branches, becoming new leads, now extend over the parking area and Highway 99. The parts present a moderate risk to the targets below.

The trunks of both the Alder and the Cherry are growing very close to the side of Highway 99. There is damage visible on several branches over the Highway that have been contacted by vehicles. The trunks will eventually grow into the adjacent structure. Based on these concerns the trees are likely to have a short useful life expectancy, less than ten years, before they need to be removed.

Conclusions

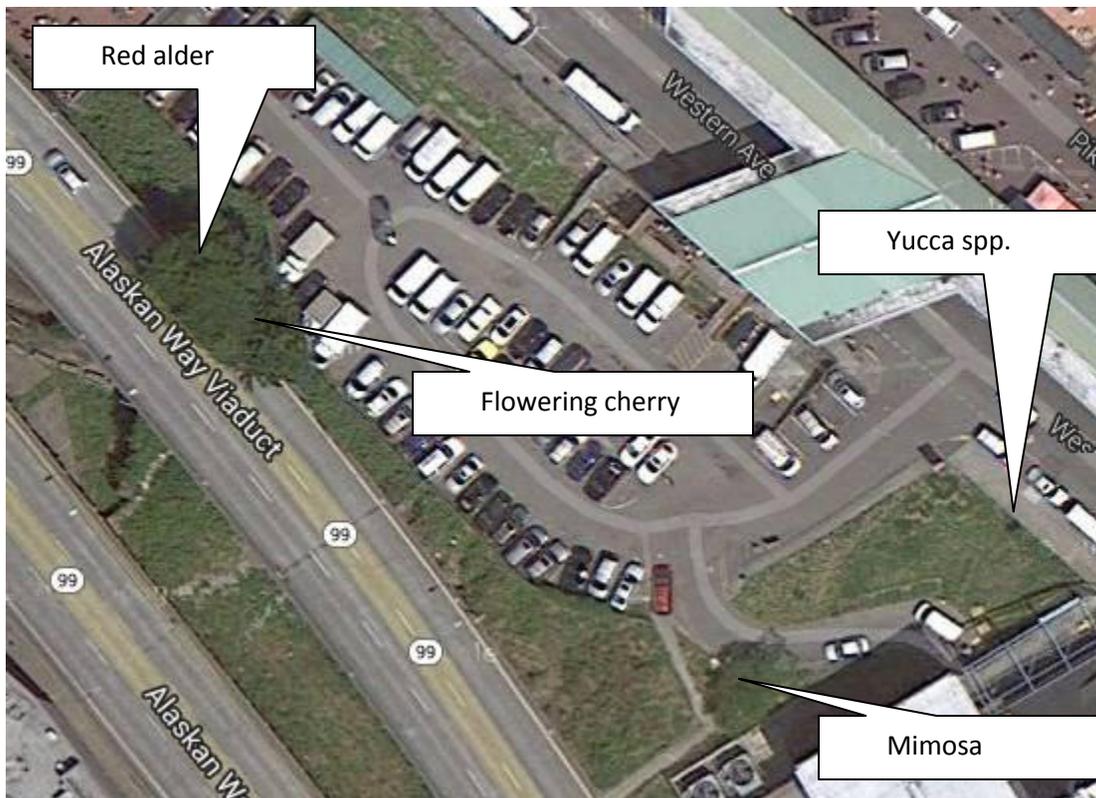
Based on my knowledge, training, and experience I have determined that none of the subject trees meet the city of Seattle's definition of an Exceptional tree.

Please contact me at (206) 528-4670 with any questions.

Respectfully,



Sean Dugan, Tree Solutions Inc.



Aerial Photograph identifying the location of the trees.

APPENDIX D

Solar Glare Analysis

Solar Glare Analysis

for the Proposed

Pike Place Market Waterfront Entrance Project

1901 Western Avenue, Seattle, WA

(Master Use Permit No. 3015514)

Prepared for

***Pike Place Market
Preservation and Development Authority (PDA)***
85 Pike Street, Room 500
Seattle, WA 98101

November 15, 2013

Prepared by
EA Engineering, Science, and Technology, Inc.
2200 Sixth Avenue, Suite 707
Seattle, WA 98121
(206) 452-5350 ext. 1713

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Section I -- Overview

Purpose of this Study

Seattle Municipal Code 23.47A.022 E. indicates that:

Glare diagrams that clearly identify potential adverse glare impacts on residential zones and on arterials shall be required when:

1. Any structure is proposed to have a facade of reflective coated glass or other highly reflective material, and/or new or expanded structures greater than sixty-five (65) feet in height are proposed to have more than thirty (30) percent of a facade composed of clear or tinted glass; and
2. The facade(s) surfaced or composed of materials referred to in subsection 1 above either:
 - a. Are oriented toward and are less than two hundred (200) feet from any residential zone, and/or
 - b. Are oriented toward and are less than four hundred (400) feet from a major arterial with more than fifteen thousand (15,000) vehicle trips per day, according to Seattle Department of Transportation data.

The proposed building could contain glass or reflective materials and is adjacent to SR-99, which has an average annual weekday traffic volume of 103,400 vehicles.¹ Thus, a solar glare analysis has been prepared for this project.

The purpose of this *Solar Glare Analysis* is to evaluate light and glare-related impacts -- specifically reflected solar glare resulting from glazing associated with the *Pike Place Market Waterfront Entrance* development that is proposed for 1901 Western Avenue N.² The focus of the analysis is the potential environmental impact to motorists on SR-99 during the PM peak traffic hour period.

Proposed Action

The proponent has submitted a Master Use Permit (MUP) (#3015514) for development of the *Pike Place Market Waterfront Entrance* project, which would consist of a 7-level mixed-use structure containing approximately 210,000 gross square feet (gsf). The proposed building would have 3 to 4 levels above-grade and the amount of gross floor area above-grade would approximate 45,731 sq. ft. Included within the building would be approximately 18,000 sq. ft. of retail/commercial space, 27,000 sq. ft. of low-income housing (40 units), and 4 levels of below-grade parking (approx. 124,000 sq. ft.) to accommodate 302 vehicles. In addition, approximately 30,000 sq. ft. of public roof terrace and walkways would be provided.

¹ Seattle Department of Transportation; Traffic Management Division. 2012. *2011 Seattle Traffic Flow Map*.

² This analysis has been prepared by EA Engineering, Science, and Technology, Inc. Staff at EA have prepared reflected solar glare analyses for approximately 25 buildings and structures -- predominantly in the downtown Seattle and Bellevue areas.

The project is located along Western Avenue to the west of Pike Place Market and directly south of Victor Steinbrueck Park (**Figures 1 and 2**). Development of the *Pike Place Market Waterfront Entrance* project would involve demolition and removal of the existing timber framed access stairs, surface parking, and building foundations. It is anticipated that these actions would occur in summer 2014.

The project site consists of two lots and encompasses an area of 38,993 sq. ft. (0.89 acres). The proposed building lot coverage would occupy approximately 100 percent of the site (**Figure 2**). **Figure 3** depicts the north and east building elevations as viewed from Victor Steinbrueck Park and Elliott Bay, respectively. **Figure 4** depicts the south and west building elevations as viewed from Heritage House and Western Avenue, respectively. It is proposed that the façades of the building include concrete, timber, metal, and glass. **Figure 5** depicts a building cross-section illustrating the proximity of the proposed project to SR-99.

As shown in **Figures 3 and 4**, it is proposed that any glazing and/or glass panels on the façade be tinted vision glass with a Low E coating and a shading coefficient that is consistent with the City's Energy Code requirements and the LEED energy requirements, as set forth in the City's proposed code amendment. Reflectivity would be dictated by the nature of glass that is employed and the requirements set forth by the City's Energy Code and the LEED energy requirements. However, it is our understanding that no excessively-reflective surfaces (i.e. mirrored glass, or polished metals) that go beyond what is required to meet energy-related code provisions are proposed anywhere on the exterior of the project.

At street level, street trees are proposed along Western Avenue and approximately 30,000 sq. ft. of public terrace and walkways are proposed for the project.

Background Information

Character of the Site and Surrounding Area

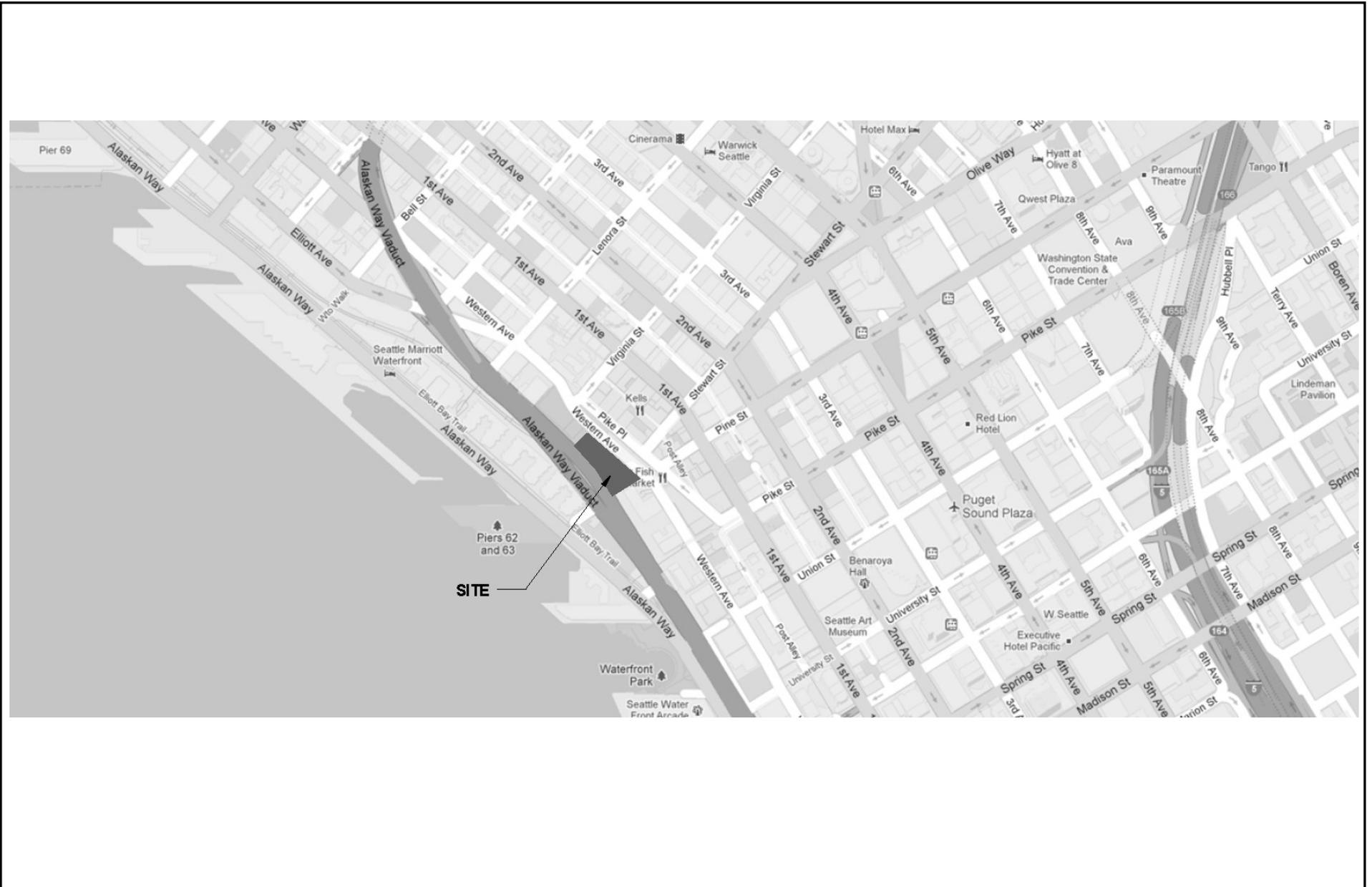
The project site is located in the in the Commercial Core neighborhood of the Downtown Urban Center. The site is also located in the Pike Place Urban Renewal Project area; a 22-acre planning area that establishes goals and objectives for Pike Place Market, and includes development, land use, and building controls.

There are no buildings on-site; existing site uses include:

- Surface parking (84 spaces) with vehicular access from Western Avenue;
- Timber-framed access stairs which connect the surface parking and Western Avenue to the Pike Place Market via the Joe Desimone Bridge;
- Two water cooling towers that are connected to the Pike Place Market's central water plant; and,
- Foundations from a building that was previously on the site (Market Municipal Building, which was destroyed by fire in 1974).

Surrounding land uses include a 3-story low income senior housing building (Heritage House) with below grade structured parking to the south, below-grade structured parking with a landscaped lid (Victor Steinbrueck Park) to the north, the Alaskan Way Viaduct (SR-99) to the west, and Western Avenue and the Pike Place Market to the east.

Pike Place Market Waterfront Entrance Environmental Checklist

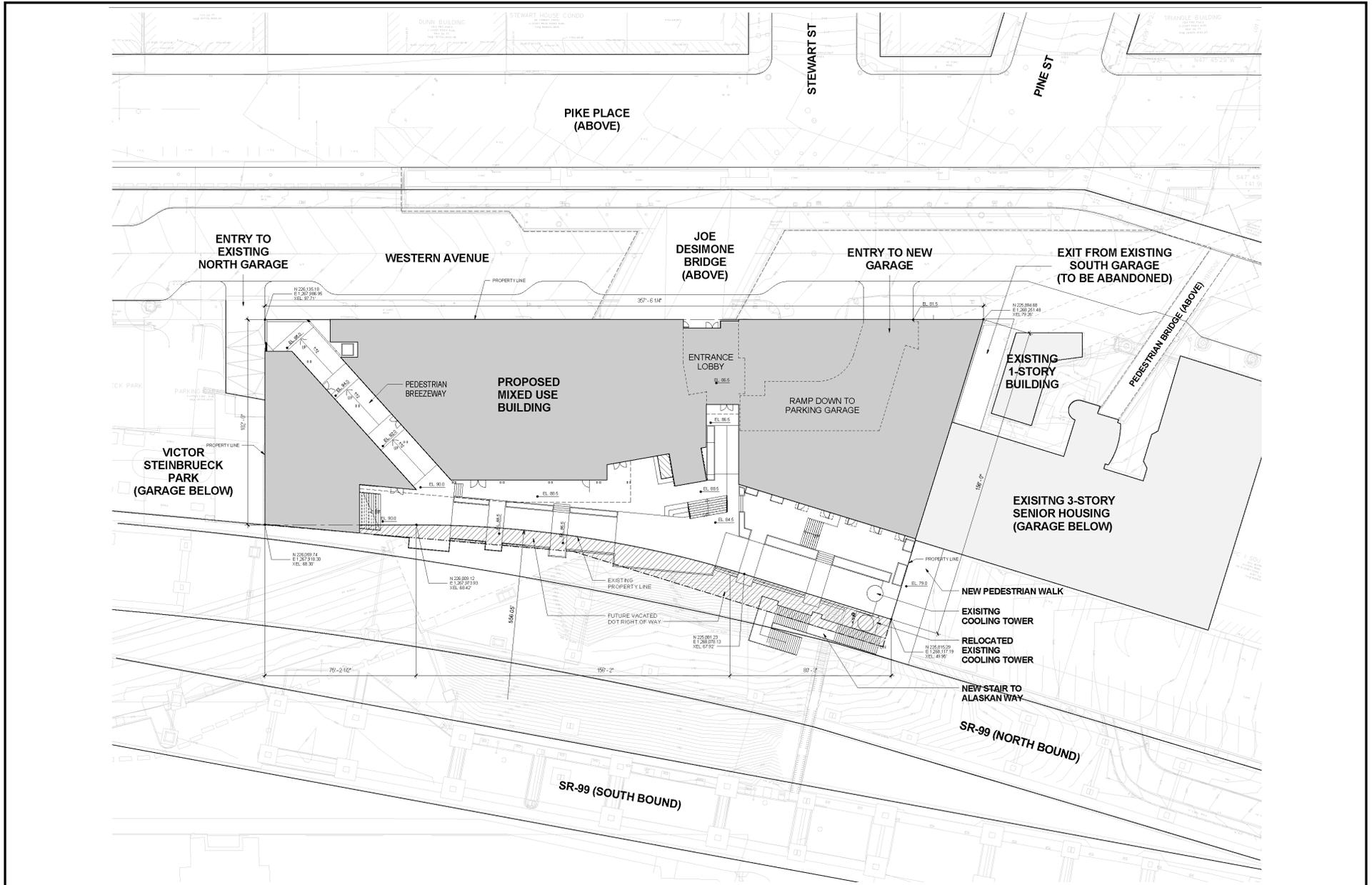


Source: The Miller Hull Partnership, 2013.



Figure 1
Vicinity Map

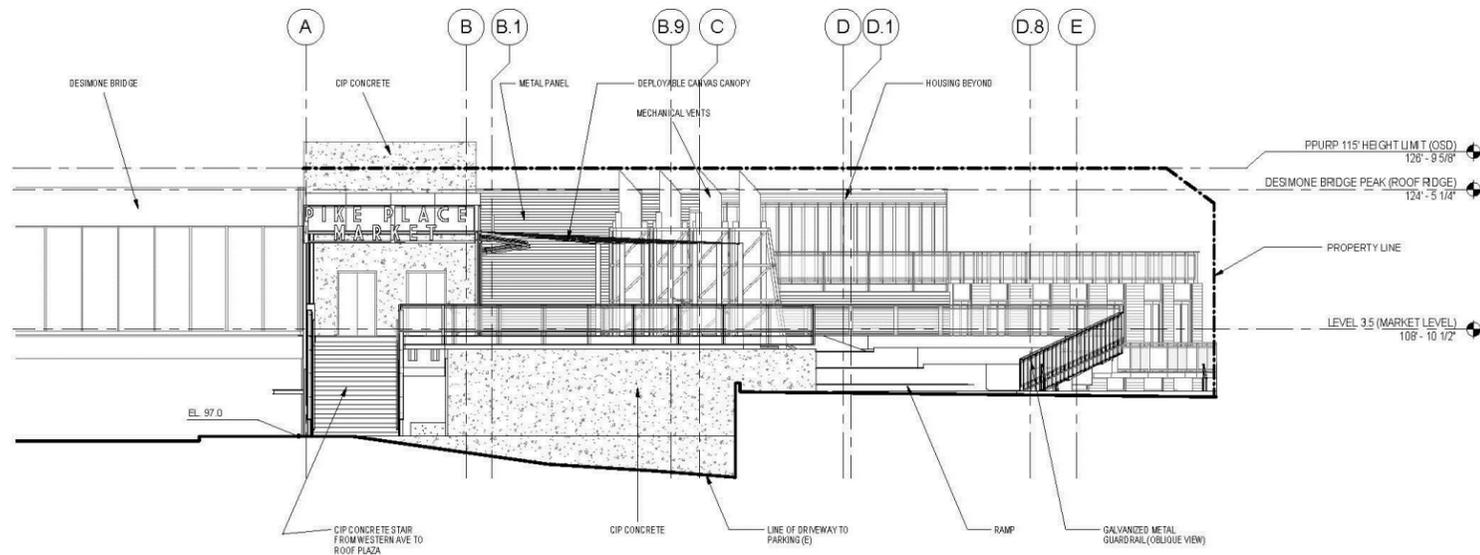
Pike Place Market Waterfront Entrance Environmental Checklist



Source: The Miller Hull Partnership, 2013.

Figure 2
Site Plan

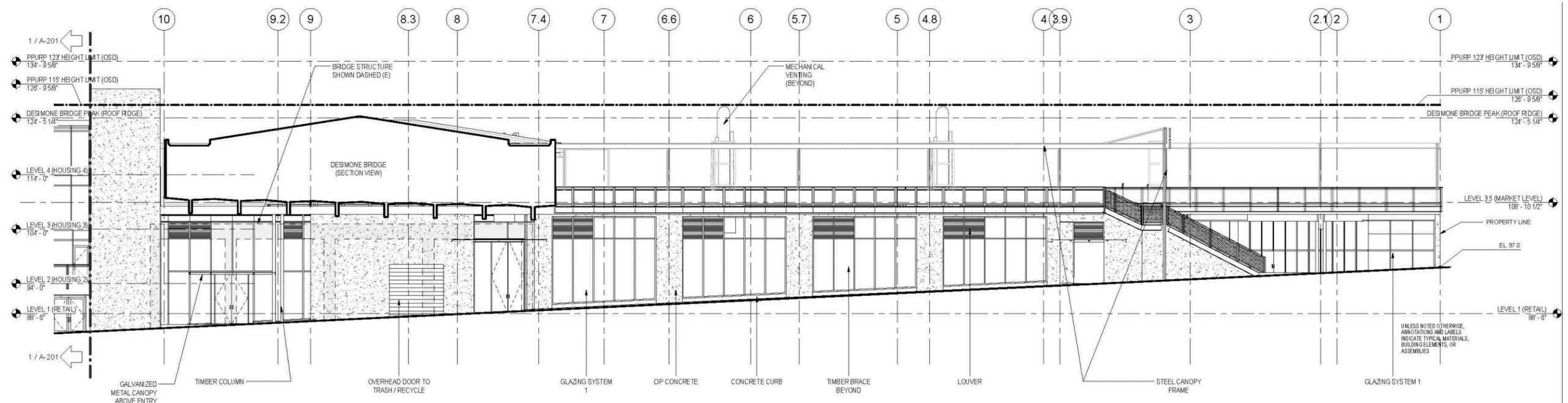
Pike Place Market Waterfront Entrance Environmental Checklist



North Elevation



East Elevation (Residential)



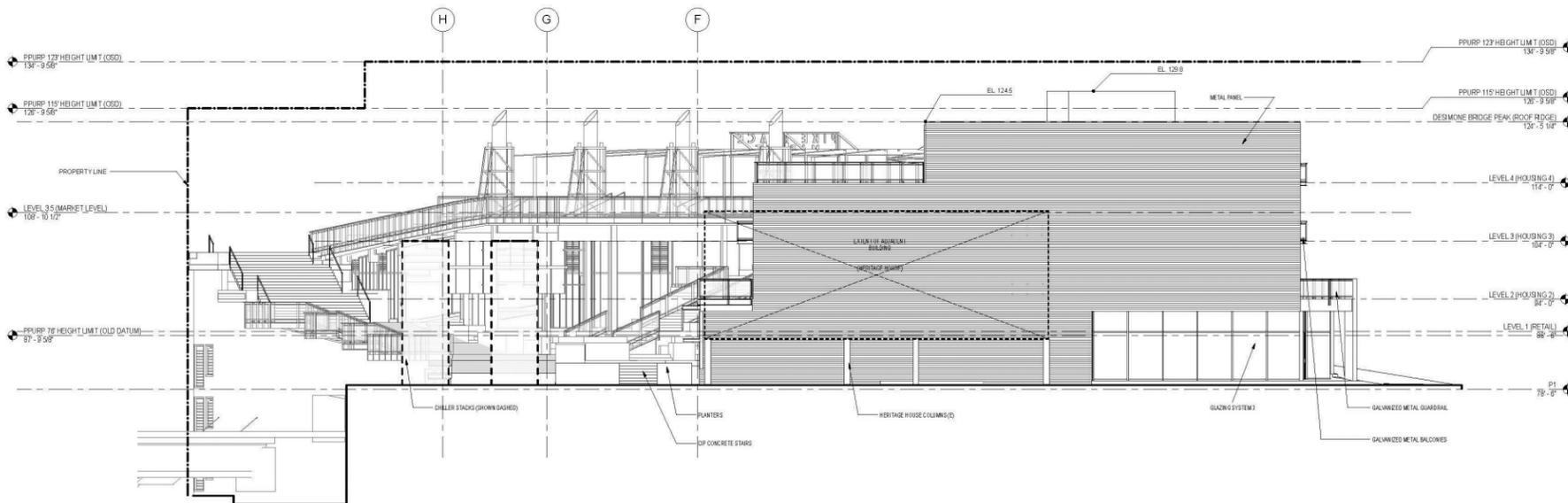
East Elevation (Commercial)

Source: Miller Hull, 2013

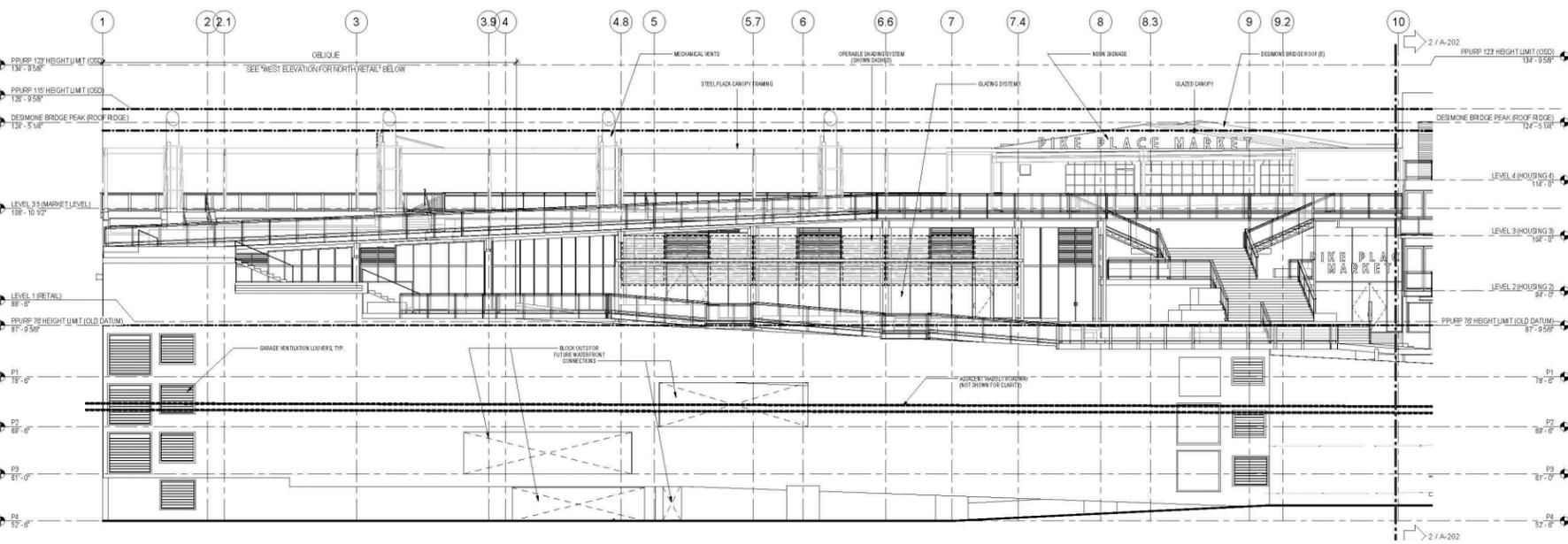


Figure 3
Elevations—North and East

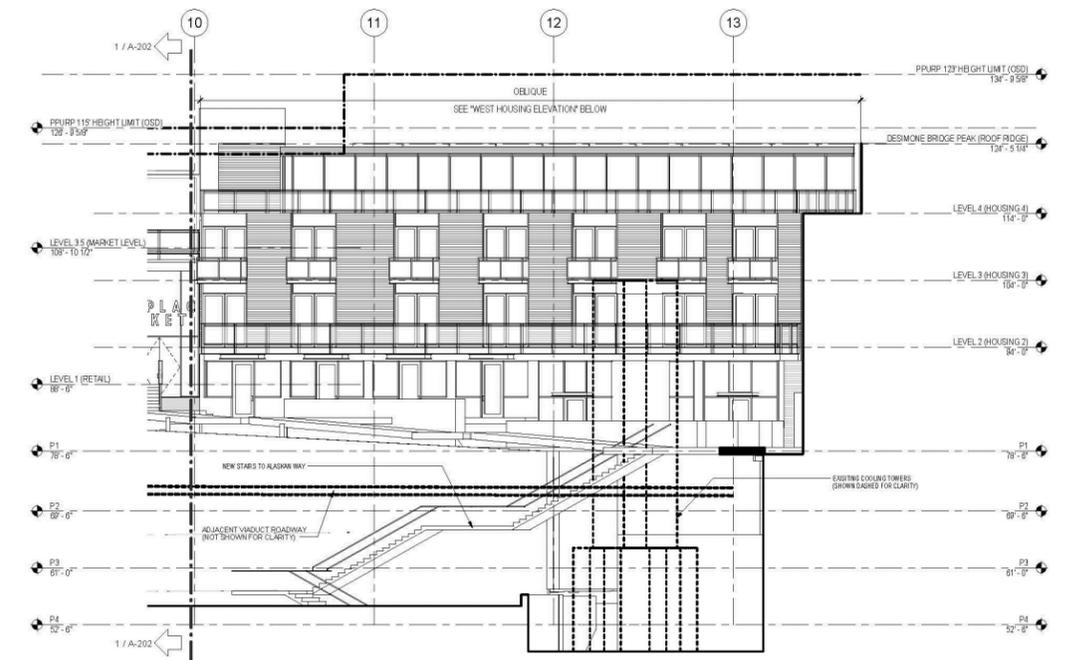
Pike Place Market Waterfront Entrance Environmental Checklist



South Elevation



West Elevation (Commercial)



West Elevation (Residential)

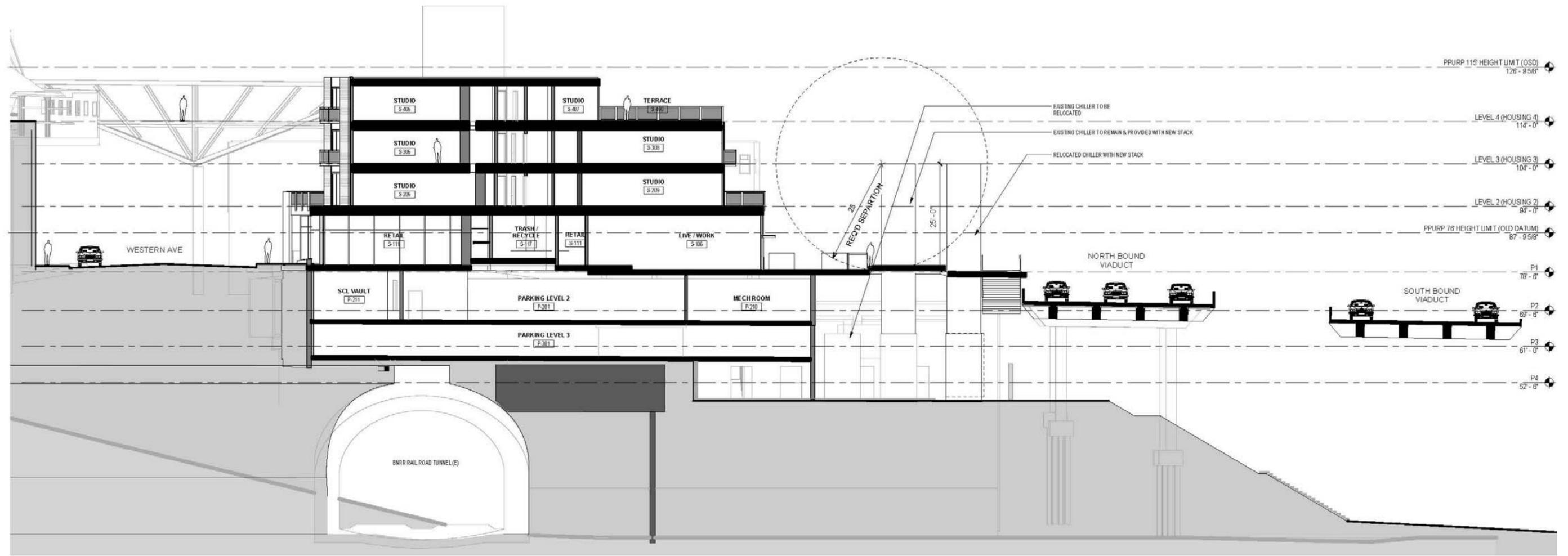
Source: Miller Hull, 2013



Figure 4

Elevations—South and West

Pike Place Market Waterfront Entrance
Environmental Checklist



1 SITE SECTION "A"- LOOKING SOUTH 3/32
3/32" = 1'-0"

Section II -- Analysis

Approach

This glare analysis has been prepared consistent with provisions of Seattle's Land Use Code and acceptable methodology³ for projects within the City. The methodology that has been used involves a trigonometric/planimetric approach for determining reflected solar glare impacts. This analysis primarily evaluates reflected solar glare impacts resulting from glazing on the west side of the proposed building during four key periods of the year – vernal equinox (March 21st), summer solstice (June 21st), autumnal equinox (September 21st), and winter solstice (December 21st). Because the focus involves impacts to motorists on SR-99, one time of each day has been evaluated for each solar period – 5 PM.⁴

The glare diagrams that are contained in this analysis include adjustments for:

- the gradients of Western Avenue and SR-99 based on street profile information;
- adjacent buildings; and,
- daylight savings time, which affects vernal equinox, summer solstice and autumnal equinox.

Findings

Summary of Findings

The analysis indicates that while northbound and southbound traffic on SR-99 could occasionally experience reflected solar glare from the west façade of the proposed building, while noticeable, such glare for the most part would be outside the cone-of-influence and would not be expected to cause problems for motorists nor differ substantially from periodic glare from stationary and mobile sources that motorists typically experience.

Sources of Light and Glare

While the light from vehicle headlights and reflective solar glare from glazing and other specular surfaces on vehicles can cause temporary glare impacts associated with a development project, the principal source of glare associated with most development projects is sunlight reflected from specular surfaces on building façades. Factors influencing the amount of reflective solar glare that may occur include: weather (e.g., cloud cover); building height, width and orientation of the façade; percent of the façade that is glazed or composed of specular material; reflectivity of the glass or specular surfaces; design relationship between the glazed and non-glazed portions of the façade (e.g., glass inset from the sash, horizontal and vertical modulation); the color and texture of building materials that comprise the façade; and the proximity of other intervening structures or landscaping.

³ City of Seattle; Department of Community Development. 1979 and 1980. *Light and Glare Study, Phase I and Light and Glare Study, Phase II*.

⁴ 4 PM for winter solstice because sunset occurs slightly after 4 PM.

Principal sources of light that presently occur proximate to the project site include streetlights along SR-99 and Western Avenue; light from headlights of vehicles operating on adjacent streets and maneuvering on parking lots and within above-grade parking garages; and building lighting (interior and in some instances low-level exterior) in the immediate area of the site. Light standards associated with the streetlight fixtures are approximately 30 ft. tall and the lamps are cobra-style (cobra lamps function by lighting a broad area).

Factors that Affect Solar Glare

Structures and, to an extent, vegetation can mitigate the environmental impacts of reflected solar glare from glazing. Such can occur if these mitigating factors are located between the sun and the glass or specular surface or between the reflective surface of the façade and the area potentially affected by reflected solar glare. While coniferous and/or evergreen vegetation typically afford the greatest amount of mitigation, at times deciduous vegetation can also restrict the amount of solar glare that is reflected from glazing -- from approximately late April to late October when leaves are present. Any on-site trees and street trees that are proposed for the project site would most likely be deciduous. Between late October and late April, while the amount of glare restriction afforded by deciduous trees is substantially less (influenced by the density of the branches), even during this time of the year they can partially restrict the amount of reflected solar glare emanating from glazed surfaces below a height of 20-30 ft.

While **Figures 6-9** have been adjusted to compensate for existing buildings and the surrounding topography, they depict a worst-case scenario in that they cannot accurately depict the following factors that would further limit the extent of possible reflected solar glare:

- the mitigating effect of existing and/or proposed street trees; and
- the extent of façade modulation that is proposed.

A key consideration for motorists is the effect of potential solar glare on a driver's cone-of-influence.⁵ The cone-of-influence is defined as the driver's viewing area and is within 20 degrees of the horizontal that points in the direction of vehicle travel. This typically represents the most sensitive viewing area for motorists. Glare impacts that occur outside the 20-degree cone-of-influence are considered less critical.

Glare Conditions of the Proposed Project

The *Pike Place Market Waterfront Entrance* development would replace the existing surface parking lot with a 45-foot tall⁶ mixed-use building. The proposed project would result in an increased number of vehicles entering and exiting the site from Western Avenue, with the potential for localized increases in light and glare resulting from vehicle headlights. No significant light and glare-related impacts associated with vehicles exiting the site onto Western Avenue, however, are anticipated.

Based on the height of the proposed *Pike Place Market Waterfront Entrance* development relative to the currently flat lot adjacent to Western Avenue, the proposed project would be noticeable. As such, stationary sources of light (e.g., interior lighting, pedestrian-level lighting,

⁵ Seattle, 2003b.

⁶ Measured from Western Avenue.

illuminated signage) from the *Pike Place Market Waterfront Entrance* mixed-use building would be visible from locations proximate to the project site. Specific information relative to stationary building light fixtures, signage, façade materials (in terms of specular or reflective characteristics) and glazing would be provided as part of the construction-level plans associated with the City's Building Permit process. As noted in the MUP planset, light fixtures would be shielded and directed away from adjacent properties. It is anticipated that project design associated with the building facade would not include highly reflective glazing or materials. At times during the construction period, however, required area lighting of the job site (safety requirements) would be provided, which would be noticeable within the immediate vicinity of the project site.

The site of the proposed *Pike Place Market Waterfront Entrance Project* is currently adjacent to the Alaskan Way Viaduct (SR-99). Because of the proximity of the proposed development to SR-99, and the fact that SR-99 is a primary north-south arterial that carries a significant amount of traffic through the Downtown area, a solar glare analysis has been performed for the proposed *Pike Place Market Waterfront Entrance* development. Any potential impacts identified in this report would be temporary in nature, as SR-99 is to be removed and replaced with a tunnel extending from approximately S. King Street on the south to the vicinity of the Battery Street Tunnel on the north. These changes are part of the Alaskan Way Viaduct and Seawall Replacement Programs. The new SR-99 tunnel beneath Downtown is scheduled to open to traffic in 2015 and the segment of the existing Alaskan Way Viaduct that is adjacent to the project site is scheduled to be demolished in 2016. The anticipated start of construction for the *Pike Place Market Waterfront Entrance Project* June 2014, with full operation of the proposed building expected to occur by December 2015.

Results of the Analysis

Because the focus of this analysis is on SR-99, only reflected solar glare from the west facade of the proposed building has been depicted and analyzed. **Figures 6 – 9** depict reflected solar glare from the proposed *Pike Place Market Waterfront Entrance* development at one time each day during each of the four key days of the solar year -- vernal equinox (approx. March 21st), summer solstice (approx. June 21st), autumnal equinox (approx. September 21st), and winter solstice (approx. December 21st). The one time of the day (5 PM⁷) reflects one of the peak hour traffic periods for SR-99. It should be noted, however, that solar glare-related impacts may also occur at other times of the day and days of the year. Also, because of the earth's rotation, the duration of reflected solar glare impacts will vary – from several minutes⁸ for a stationary observer to substantially less for a mobile observer.

⁷ 4 PM for winter solstice because sunset occurs slightly after 4 PM.

⁸ The rate of change of the sun's angle relative to the earth varies widely by season – from about 5 degrees horizontally and 2 degrees vertically every 15 minutes in June to 3 degrees horizontally and 1 degree vertically every 15 minutes in December.

Vernal Equinox – Approximately March 21st (refer to **Figure 6**)

Climatic data indicate that March typically has 3 clear days, 6 partly cloudy days and 22 cloudy days⁹

- At **5 PM**, reflected solar glare would extend from portions of the west facade of the proposed building to the southwest toward SR-99. Reflected solar glare extending to the southwest would not affect south-bound motorists on SR-99 at this time of day. The glare extending to the southwest could potentially affect north-bound motorists on SR-99 for one to two seconds in the vicinity of proposed project. While noticeable, this glare would be outside the cone-of-influence and would not be expected to cause problems for motorists nor differ substantially from periodic glare from stationary and mobile sources that motorists typically experience.

Summer Solstice – Approximately June 21st (refer to **Figure 7**)

Climatic data indicate that June typically has 5 clear days, 8 partly cloudy days and 17 cloudy days.¹⁰

- At **5 PM**, reflected solar glare would extend from the west facade of the proposed building to the southwest. Reflected solar glare would not affect motorists on SR-99 at this time of day.

Autumnal Equinox – Approximately September 21st (refer to **Figure 8**)

Climatic data indicate that September typically has 8 clear days, 9 partly cloudy days and 13 cloudy days.¹¹

- At **5 PM**, reflected solar glare would extend from portions of the west facade of the proposed building to the southwest toward SR-99. Reflected solar glare extending to the southwest would not affect south-bound motorists on SR-99 at this time of day. The glare extending to the southwest could potentially affect north-bound motorists on SR-99 for one to two seconds in the vicinity of proposed project. While noticeable, this glare would be outside the cone-of-influence and would not be expected to cause problems for motorists nor differ substantially from periodic glare from stationary and mobile sources that motorists typically experience.

Winter Solstice – Approximately December 21st (refer to **Figure 9**)

Climatic data indicate that December typically has 2 clear days, 4 partly cloudy days and 25 cloudy days.¹² On this day of the year at 4 PM the altitude of the sun above the horizon is approximately 2 degrees, therefore, reflected solar glare distances are great.

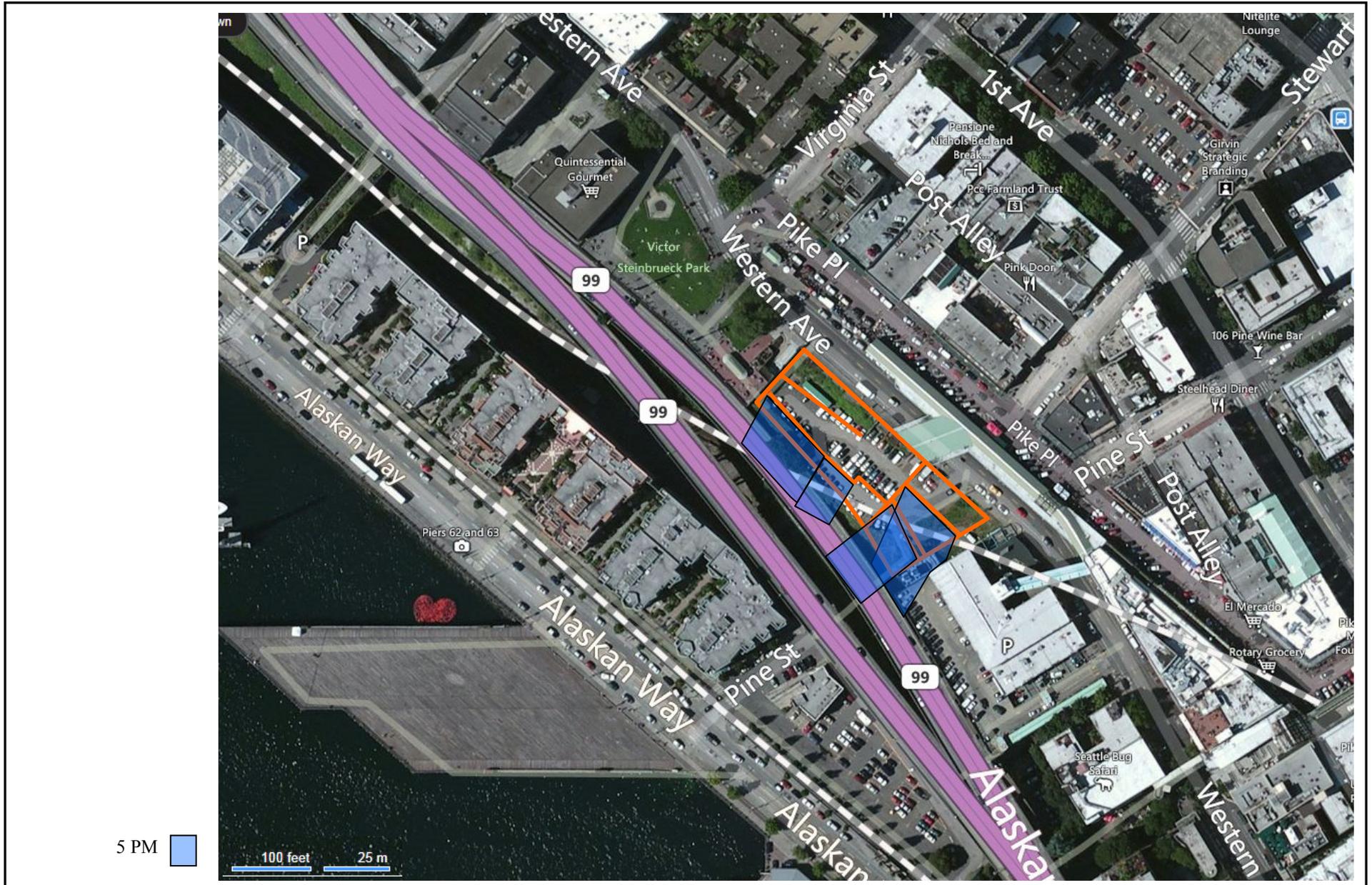
⁹ U.S. Dept. of Commerce, NOAA, 1992.

¹⁰ Ibid.

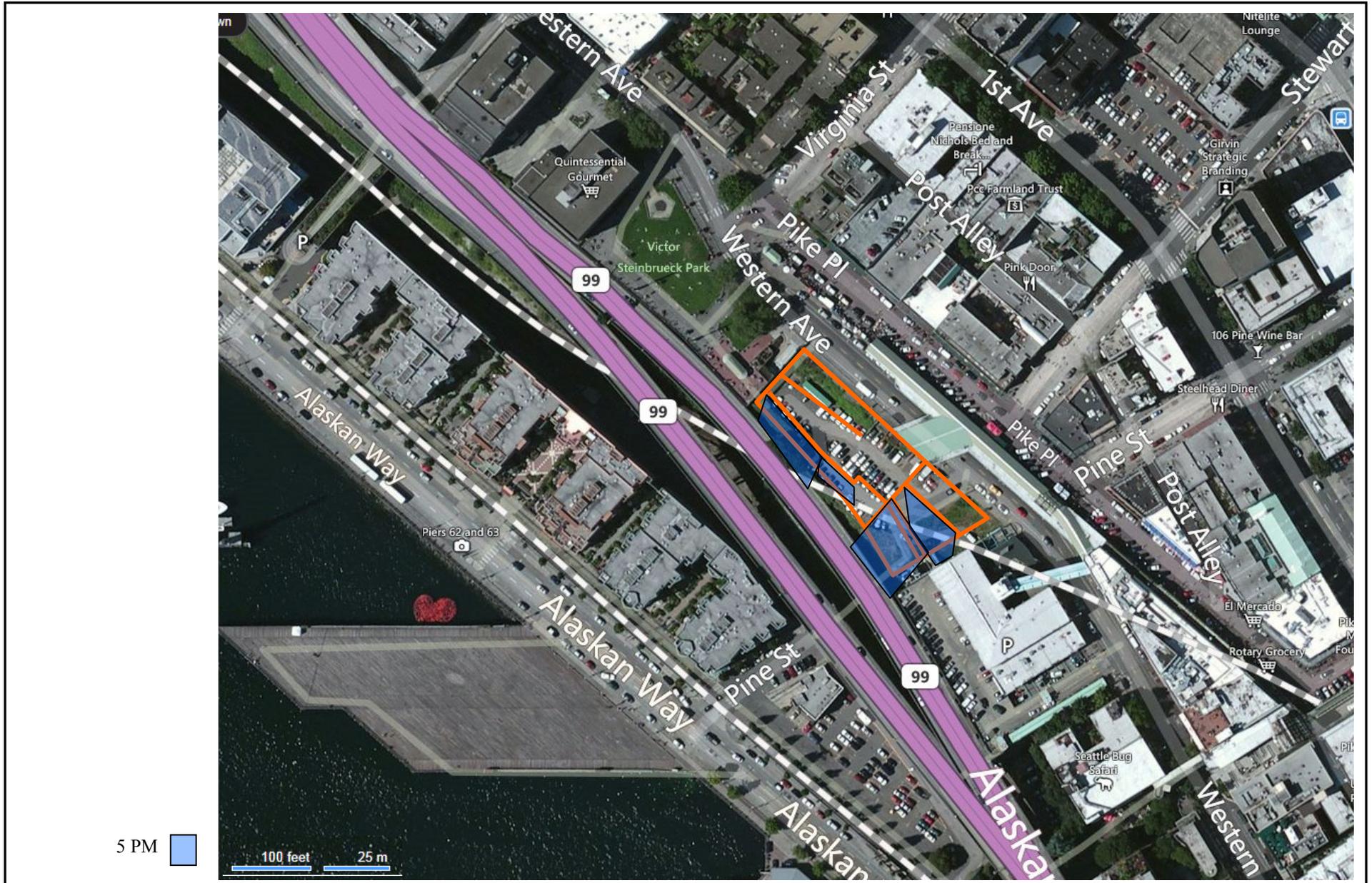
¹¹ Ibid.

¹² Ibid.

Pike Place Market Waterfront Entrance Environmental Checklist



Pike Place Market Waterfront Entrance Environmental Checklist



Source: EA, 2013



Figure 7

June 21st—Summer Solstice –Pacific Daylight Savings Time

Pike Place Market Waterfront Entrance Environmental Checklist

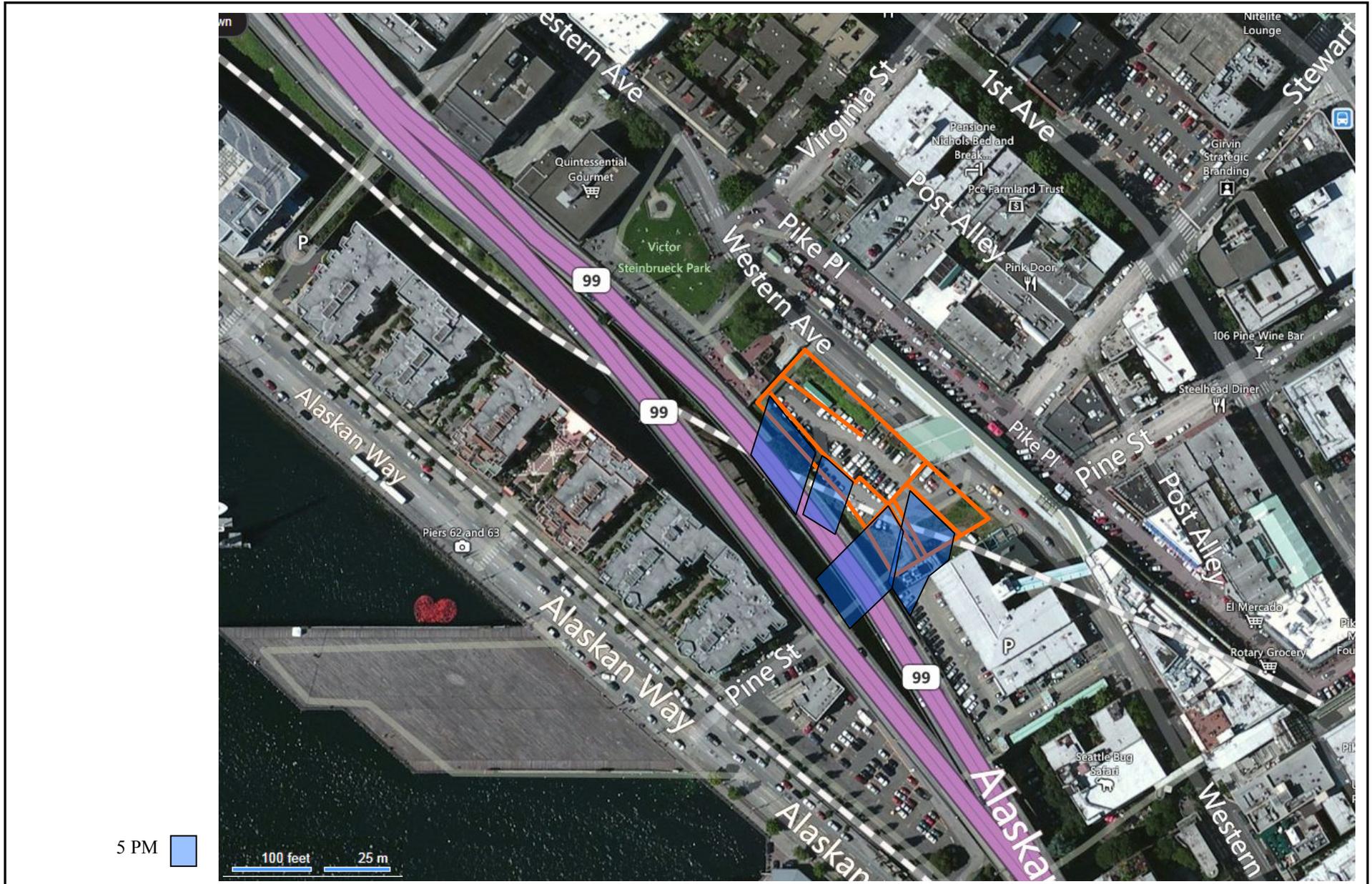
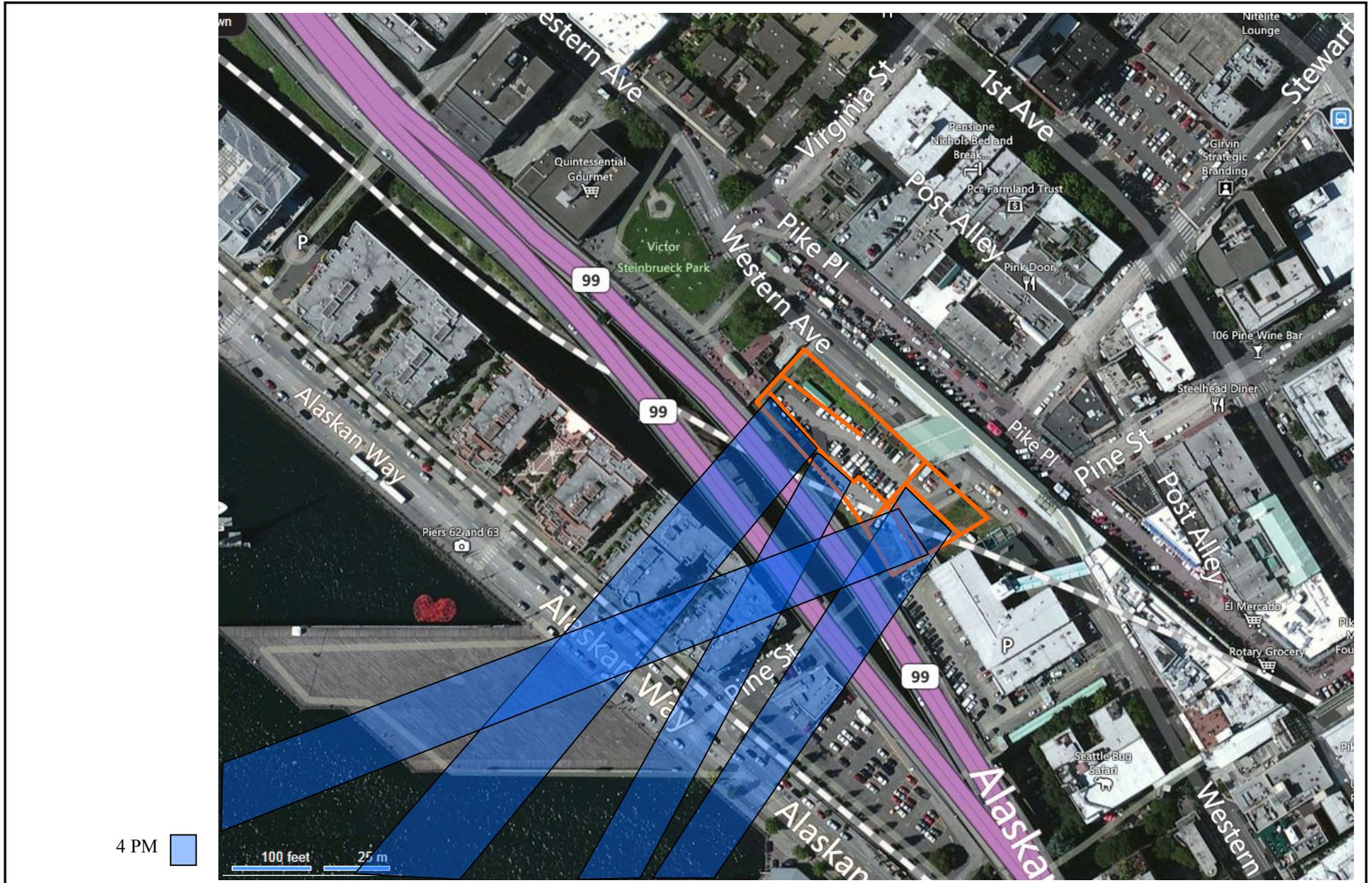


Figure 8
September 21st—Autumnal Equinox –Pacific Daylight Savings Time (PDST)

Pike Place Market Waterfront Entrance Environmental Checklist



Source: EA, 2013



Figure 9

December 21st—Winter Solstice—Pacific Standard Time (PST)

- At **4 PM**, reflected solar glare would extend from portions of the west facade of the proposed building to the southwest toward SR-99. The glare extending to the southwest could potentially affect north-bound and south-bound motorists on SR-99 for three to four seconds in the vicinity of proposed project. While noticeable, this glare would be outside the cone-of-influence and would not be expected to cause problems for motorists nor differ substantially from periodic glare from stationary and mobile sources that motorists typically experience.

Potential Mitigation Measures

While northbound and southbound traffic on SR-99 could occasionally experience reflected solar glare from the west façade of the proposed building, while noticeable, such glare for the most part would be outside the cone-of-influence and would not be expected to cause problems for motorists nor differ substantially from periodic glare from stationary and mobile sources that motorists typically experience.

In summary, no significant long term, reflected solar glare-related environmental impacts are anticipated for motorists on SR-99 as a result of the proposed *Pike Place Market Waterfront Entrance* project and no mitigation measures are necessary. The following measures, however, would help to reduce overall light and glare from the project as it relates to the neighborhood surrounding the site.

- As noted previously, while building façade materials are in the process of being finalized, the facades of the proposed building could include metal and glass window wall structure with glass spandrel panels. The City's Pike Place Market Historical Commission is currently reviewing project-related design elements. At this point in the process, the structure has been designed with façade modulation and would potentially include window shades, which is expected to lessen potential reflected solar glare-related impacts. Reflectivity of the glazing will be dictated by the nature of glass that is employed and the requirements set forth by the City's Energy Code and the LEED energy requirements. It is anticipated, however, that no excessively-reflective surfaces (i.e. mirrored glass, or polished metals) that go beyond what is required to meet energy-related code provisions are proposed anywhere on the exterior of the project buildings.
- The proposed street trees, as well as the use of building materials with relatively low-reflectivity at street level would minimize reflective glare-related impacts to pedestrians, motorists and nearby residents.
- Pedestrian-scale lighting would be provided consistent with code, function and safety requirements. Exterior lighting would include fixtures to direct the light downward and/or upward and away from off-site land uses.

Significant Unavoidable Adverse Impacts

No significant unavoidable adverse impacts are anticipated.