



Pike Pine Streetscape and Bicycle Improvements Project Seattle, Washington

SEPA Checklist

February 5, 2021

STATE ENVIRONMENTAL POLICY ACT (SEPA) ENVIRONMENTAL CHECKLIST

A. BACKGROUND

1. Name of proposed project, if applicable:

Pike Pine Streetscape and Bicycle Improvements Project (the Project)

2. Name of applicant:

The Seattle Office of the Waterfront and Civic Projects (OWCP) and the Seattle Department of Transportation (SDOT)

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

Therese Casper, Project Manager
Seattle Office of the Waterfront and Civic Projects
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Seattle, WA 98124
206-684-8764

4. Date checklist prepared:

February 5, 2021

5. Agency requesting checklist:

SDOT

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

Pending timely receipt of approvals and permits, Project construction is anticipated to begin in June 2023 and be substantially complete by December 2024.

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

Neither OWCP nor SDOT has plans for future additions to or expansion of the Project. SDOT has plans for a future project that borders the Project in that SDOT's future project, the Center City Connector Streetcar Project (CCCSP) located on First Avenue, will be partially constructed adjacent to or just slightly within the westernmost end of the Project's footprint. CCCSP is under design. The Project will need to coordinate with CCCSP regarding the intersections of First Avenue with Pike and Pine Streets.

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

- *Cultural Resources Inadvertent Discovery Plan, Pike Pine Streetscape and Bicycle Improvements* (to be prepared)
- *Pavement Evaluation Report, Pike Pine Streetscape and Bicycle Improvements (Draft)* prepared for ZGF Architects by Aspect Consulting (April 8, 2020)
- *Pike Pine Streetscape and Bicycle Improvements Project Areaways Evaluation Report* prepared by Chudgar Engineering Company (April 8, 2020)
- *Pike Pine Streetscape and Bicycle Improvements Traffic Analysis Technical Memorandum (Draft)* prepared for ZGF by Concord Engineering (March 27, 2020)
- *"Preliminary (30%) Stormwater Technical Memorandum, Pike Pine Streetscape & Bicycle Improvements"* prepared for SDOT by Toole Design (April 2, 2020)

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.

A number of applications are pending for government approvals of other proposals in and around the Project footprint by public and private entities. These proposals are not anticipated to directly affect the Project footprint.

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

- Seattle Parks and Recreation Revocable Use Permit
- Seattle Landmarks Adjacency Review
- Temporary Noise Variance or Major Public Project Construction Noise Variance
- Ecology NPDES Construction Stormwater General Permit
- Possible: Washington State Department of Transportation (WSDOT) permit for work over I-5 and for work adjacent to the WSDOT-owned Jim Ellis Freeway and Plymouth Pillars Parks.
- Possible: National Environmental Policy Act (NEPA) documentation, likely consisting of a completed categorical exclusion form, approved by WSDOT on behalf of the Federal Highways Administration
- Possible: U.S. Department of Transportation Act Section 4(f) Evaluation
- Possible: Ecology Coastal Zone Management Act Consistency Determination Certification
- Possible: Approval of or Memorandum of Agreement with the Washington State Department of Archaeology and Historic Preservation (DAHP)

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

This Project combines the OWCP's "Pike Pine Renaissance" pedestrian and streetscape improvement project with SDOT's protected bicycle lane project on Pike and Pine Streets to create a single, seamless streetscape and bicycle improvements project on Pike and Pine Streets in downtown Seattle, Washington between First and Bellevue Avenues, including the portions of Pike and Pine Streets between about Ninth and Minor Avenues that cross I-5 (the I-5 bridges). See Figure 1, Project Footprint, attached. Major Project elements consist of

1. Extending to Melrose and Bellevue Avenues the one-way arterial couplet that currently ends one-way to the east on Pike Street at Terry Avenue and currently starts one-way to the west on Pine Street at Eighth Avenue. The Project will remove the traffic lanes that do not conform with the new one-way travel directions of Pike and Pine Streets.
2. Adding and shifting protected bike lanes to create a bike lane couplet on Pike and Pine Streets between Melrose and Second Avenues, with the east-bound bike lane traveling along the north side of Pike Street and the west-bound bike lane traveling along the south side of Pine Street. Adding, on the Melrose to Bellevue Avenues block on Pike Street, bike facilities that are likely to consist of a two-way protected bike lane. As part of this work, the Project will
 - a. Shift the existing eastbound protected bike lane on Pike Street between Ninth Avenue and Bellevue Avenue from the south side of the street to the north side of the street, and shift the existing westbound bike lane on Pine Street between Melrose Avenue and Ninth Avenue from the north side of the street to the south side of the street, where it will be constructed as a protected bike lane.
 - b. Enhance with landscaped or curbed buffers the existing one-way protected bike lanes except for the protected bike lane on the 400 block of Pine Street.
 - c. Install new protected one-way bike lanes to complete gaps in the existing protected bike lane network. In particular, the Project will add an eastbound protected bike lane on Pike Street from Sixth Avenue to Ninth Avenue and make spot curb adjustments on Pike Street between Seventh and Ninth Avenues to accommodate the new protected bike lane. The Project will also add a westbound protected bike lane on Pine Street from Ninth Avenue to Eighth Avenue.
3. Widening and reconstructing sidewalks in some areas of the corridor, including
 - a. Widening the sidewalk on Pine Street between Third and Fourth Avenues to improve the space given to pedestrians and the protected bike lane;
 - b. Upgrading SDOT-owned accessories on the WSDOT-owned I-5 bridges by widening sidewalks and installing new railings with integrated lighting;
 - c. Performing sidewalk reconstruction work generally at the west and east ends of the project area, involving some areaway work on Pike and Pine Streets between First and Third Avenue to rebuild sidewalks on top of areaways; and
 - d. Installing ADA-compliant curb ramps.

4. Creating a more consistent and continuous tree canopy along the project corridor by replacing trees that are in poor condition, moving tree locations in limited areas, and infilling trees where gaps exist.

Other Project elements include relocating and adding stormwater inlets and catch basins as well as pipes connecting the inlets and catch basins to existing drainage and sewer lines; likely lengthening of transit-only lanes thereby prioritizing transit and allowing it to experience shorter travel times; upgrading existing traffic signals by replacing span wires with mast arms and updating traffic signal heads; adding roadway luminaires and two-globe pedestrian lighting fixtures along with replacing, on parts of Pike Street, three-globe pedestrian lighting fixtures with two-globe fixtures to match the two-globe fixtures on Pine Street; performing pavement and sidewalk spot repairs; rechannelizing and restriping the roadway as needed; creating curbless shared streets on Pike and Pine Streets between First and Second Avenues; installing distinctive painted or paved crosswalk treatments; installing signs, bollards, bicycle racks, benches and other street furniture; and integrating public art into the Project.

The Project will be funded with local funds; no state or federal funding is anticipated.

- 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 Project is located in downtown Seattle, Washington, on city of Seattle and WSDOT rights of way of Pike and Pine Streets. The Project extends on Pike and Pine Streets from the eastern side of the First Avenue right of way in the Pike-Market neighborhood to the east through the Central Business District neighborhood and to the Bellevue Avenue in the Broadway/Capitol Hill/First Hill neighborhood. See Figure 1, Project Footprint, attached. The Project is entirely within city right of way except where the Project crosses I-5, where the Project is within WSDOT right of way. The project is located within Township 25N, Range 4E and Sections 31 and 32.

B. ENVIRONMENTAL ELEMENTS

1. Earth

a. General description of the site: *[Check the applicable boxes]*

☒ Flat ☐ Rolling ☒ Hilly ☒ Steep Slopes ☐ Mountainous
☐ Other: (identify)

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

The Project footprint ranges from rolling, at the west end of the Project from First until about Seventh Avenues, to sloping upward to the eastern end of the Project footprint from about Seventh to Bellevue Avenues. The steepest slope in the Project footprint is in the 13-21% category on Pine Street between Boren and Minor Avenues. Notably, the Project footprint crosses I-5 from about Ninth to Terry Avenues on Pike Street and from about east of Terry to west of Minor Avenues on Pine Street. I-5 is in a road cut that is at least 20 feet below the Pike and Pine Street bridges that cross it.

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

The Project footprint is generally covered by impervious surfaces, consisting of sidewalks and pavement. The United States Department of Agriculture Natural Resources Conservation Service Web Soil Survey at <https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx> classifies the soil in the Project footprint as "Urban land," which is classified as not prime farmland. Surface geology mapping describes the western half of the Project footprint as "Modified land" consisting of silt, sand, debris and slag and the eastern half of the Project footprint as "Till" consisting of till and hardpan. Soil will be excavated during Project construction. Depending on its suitability, the excavated soil will be reused on site or hauled off site for disposal.

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

There are no surface indications or known history of unstable soils in the immediate Project vicinity. However, while the steepest slope within the Project footprint is the portion of Pine Street between Boren and Minor Avenues that is in the 13-21% category, immediately adjacent to and beneath the portion of the Project footprint that is just east of I-5 and its vertical retaining walls are several areas where slopes are mapped as being greater than 40%.

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

The Project will disturb about 164,000 square feet of ground by excavating, grading and filling. A total of approximately 13,000 cubic yards of pavement, underlying rock base course and soil will be excavated and filled during Project construction. Excavating and filling will extend up to approximately 15 feet below ground surface (bgs) for installation of several signal pole foundations; up to approximately 10 feet bgs in several locations for relocating and adding stormwater inlets, catch basins and connecting pipe and in places along the Project footprint for luminaire installation; and up to approximately 3 feet bgs in places along the Project footprint for pedestrian lighting, street tree replacement and installation, and sign post, bollard and street furniture installation. Excavating, grading and

filling will occur throughout the Project footprint up to approximately 2 feet bgs for pavement and sidewalk repair, removal and replacement. Any fill used on site would be required to satisfy the applicable version of the City of Seattle Standard Specifications for Road, Bridge and Municipal Construction.

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

Erosion could occur during Project construction as a result of grading, excavation and filling work.

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

Close to 100% of the Project site is currently covered with impervious surfaces. After Project construction, about 95% to 100% of the Project site will be covered with impervious surfaces, with the balance of the Project site having tree wells, planted buffers, and possibly several small, landscaped areas.

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

To control or reduce erosion, or other impacts to the earth, the contractor will be required to comply with the applicable version of the Seattle Standard Plans and Standard Specifications for Road, Bridge and Municipal Construction and the Seattle Stormwater Code. In particular, the Project contractor will be required to perform the following measures and implement the following best management practices (BMPs) at the Project construction site:

- Provide a Project-specific Spill Prevention Plan for City review and acceptance before beginning any Project site construction activities;
- Provide a Project-specific Stormwater Pollution Prevention Plan (SWPPP) with BMPs for City review and acceptance before beginning construction activities;
- Perform all paving and utility work in accordance with City requirements and the requirements of the utilities involved; and
- Use catch basin filters in catch basins located within and downgradient of the site if necessary to prevent sediments from entering the storm drainage system during construction.

2. Air

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

The types of air emissions from Project construction would include:

- Minor fugitive dust generated during excavation, grading and filling and other construction activities;
- Engine exhaust emissions from construction equipment and vehicles and from work vehicles; and
- Increased motor vehicle emissions associated with increased traffic congestion during construction.

Project operation and maintenance, after Project construction completion, would not result in new air emissions.

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

There are no off-site sources of emissions or odor that would affect the Project.

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

To control or reduce emissions, or other impacts to the air, the contractor must comply with the applicable version of the Seattle Standard Specifications for Road, Bridge and Municipal Construction, which require the contractor to comply with all provisions of federal, state and local statutes, ordinances, and regulations. The specifications specifically require that contractors maintain air quality to comply with the national emission standards for hazardous air pollutants.

Minimizing air quality impacts during construction may include such measures as spraying areas of exposed soil with water for dust control, periodically cleaning streets in the construction zone, and minimizing vehicle and equipment idling to limit exhaust emissions.

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.**

There is no surface water body on or in the immediate vicinity of the Project footprint.

- 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.**

Not applicable.

- 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 surface water or wetlands.

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

No.

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

No.

- 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.**

Project construction and operation will not involve discharges of waste materials to surface waters. Waste materials generated during Project construction will be collected and hauled off-site for proper recycling or disposal. Waste materials generated during Project operation, such as those generated during Project maintenance, will also be collected and hauled off-site for proper recycling or disposal.

b. Ground:

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

No.

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

No waste material will be discharged into the ground.

c. Water runoff (including stormwater):

- 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.**

Runoff, consisting of stormwater, will be generated on the Project footprint from rain storms and from runoff from upslope areas. Runoff from the Project footprint will drain to areas having combined and separated sewers. Runoff draining to combined sewers will generally flow to the King County West Point Treatment Plant where the water will be treated and discharged into Puget Sound. Runoff draining to separated sewers will drain to the stormwater drainage system and discharge into Lake Union. Project construction will not alter current runoff drainage paths: during Project construction and operation, runoff will flow into combined sewers or the stormwater drainage system, as it does now.

Because the project is anticipated to disturb more than an acre of ground, the City expects to obtain an NPDES Construction Stormwater General Permit for Project construction from Ecology and expects the Project contractor to prepare a Project-specific Stormwater Pollution Prevention Plan (SWPPP). During Project construction, the Project contractor will implement BMPs from the SWPPP as well as treatment, sampling and notification requirements from the NPDES permit to ensure stormwater runoff from the Project footprint is appropriately clean before entering combined sewers or the stormwater drainage system.

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

Waste materials, in the form of spilled deleterious or hazardous substances, could enter ground or surface waters. However, the Project contractor will prepare and then, during Project staging and construction, implement a Project-specific Spill Prevention Plan to prevent, to the extent possible, waste materials from entering ground and surface waters.

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

The Project will install trees and planted buffers, which could increase the amount of rainfall on the Project footprint allowed to drain to groundwater instead of draining to the combined sewer or the stormwater drainage system.

While the Project will install and relocate catch basins and their connecting pipes, the Project will not alter current drainage patterns on or in the vicinity of the Project footprint.

During Project construction and operation, runoff will flow into the combined sewer or the stormwater drainage system as it does now.

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

See Section B.1.h, as well as Sections B.3.a.6) and B.3.c.1), 2) and 3), for proposed measures.

4. Plants

a. Types of vegetation found on the site: [Check the applicable boxes]

- ☒ Deciduous trees: ☐ Alder ☐ Maple ☐ Aspen ☐ Other: (identify)
☒ Evergreen trees: ☐ Fir ☐ Cedar ☐ Pine ☐ Other: (identify)
☒ Shrubs
☒ Grass
☐ Pasture
☐ Crop or grain
☐ Orchards, vineyards, or other permanent crops
☐ Wet soil plants: ☐ Cattail ☐ Buttercup ☐ Bulrush ☐ Skunk cabbage
☐ Other: (identify)
☐ Water plants: ☐ water lily ☐ eelgrass ☐ milfoil ☐ Other: (identify)
☐ Other types of vegetation: (identify)

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

A total of about 28 trees will be removed from the Project footprint during Project construction. These trees will generally consist of maple, cherry, oak, locust, and ash trees. The Project will replace these removed trees, at a ratio of two trees planted for each tree removed, with maple, cherry, and elm trees. This will result in the Project installing 28 more trees than the number demolished, with the overall number of trees being greater after Project construction than before. The Project is not proposing to remove any understory plantings.

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

There are no known threatened or endangered species 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:

See Section B.4.b. for information about the Project's removal and installation of trees and removal of understory plantings. The Project will install ground level plantings, such as ground cover, low shrubs and grasses, in the landscaped bike lane buffers constructed as part of the Project. During Project construction, the contractor will be required to protect the street trees that are to remain and must prepare and implement a Tree, Vegetation, and Soil Protection Plan.

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

There are no known noxious weeds or invasive species on or near the site.

5. Animals

a. Birds and animals which have been observed on or near the site or are known to be on or near the site: [Check the applicable boxes]

Birds: ☐ Hawk ☐ Heron ☐ Eagle ☒ Songbirds
☒ Other: (identify) Crows, pigeons, doves, starlings, robins, gulls, and house sparrows are common urban species that could occur in the Project area.

Mammals: ☐ Deer ☐ Bear ☐ Elk ☐ Beaver
☒ Other: (identify) Rats, gray squirrels, and raccoons are common urban species that likely occur in the Project area.

Fish: ☐ Bass ☐ Salmon ☐ Trout ☐ Herring
☐ Shellfish ☐ Other: (identify)

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

There are no known threatened or endangered species on or near the site.

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

The site is part of the Pacific Flyway. Migratory birds may benefit from street trees, ground vegetation, and the nearby Elliott Bay.

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

No impacts to wildlife are anticipated; accordingly, no measures to preserve or enhance wildlife are proposed.

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

No invasive animal species are known to occur on or near the site.

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 will be used to operate new, upgraded and existing traffic signals and new, replacement and existing luminaires and pedestrian lighting within the Project footprint.

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

No.

- 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 plans of this proposal include several energy conservation features. Specifically, the emphasis of the Project on creating pedestrian and bicycle facilities is expected to increase pedestrian and bicycle use of the streets and sidewalks in the Project area, reducing vehicle use in the area and therefore reducing vehicular fuel use. Additionally, once the trees added by the Project are mature, shade provided by them may reduce the need for adjacent buildings to use air conditioning leading to energy conservation. Measures to reduce energy impacts will also be taken during Project construction by encouraging workers to avoid leaving equipment and vehicles idling when not in use.

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.**

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

Known or possible contamination in the Project footprint from present or past uses consists of possible contamination from two active State of Washington Department of Ecology Confirmed or Suspected Contaminated Sites List (CSCSL) sites with addresses on Pine Street near Eighth and Ninth Avenues. Based on their addresses or location descriptions, underground storage tanks (USTs) that are still in place or that have been closed in place could be encountered on Pine Street near Third, Melrose and Bellevue Avenues. These potential conditions will be evaluated closer to the development of the final Project design. If necessary, special provisions will be added to the Project contract to notify the contractor of the potential conditions and how to manage them.

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

The only known existing hazardous chemicals or conditions that might affect Project development, design or construction are natural gas supply lines typical in commercial and residential neighborhoods. As is customary for all OWCP and SDOT projects, public and private utilities, including natural gas supply lines, will be identified and worked around during Project development, design and construction. No known underground hazardous liquid or gas transmission pipelines exist in the Project area or

its vicinity. The USTs described in B.7.a.1), above, or any other USTs, will be appropriately managed during construction, as necessary.

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

Toxic or hazardous chemicals that might be used during Project construction include vehicle and equipment fuels, lubricants and additives such as gasoline, diesel fuel, motor oil, hydraulic oil, and antifreeze as well as pavement coatings and paint. These same chemicals might be used as part of maintenance during the Project's operating life.

4) Describe special emergency services that might be required.

No special emergency services might be required.

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

A Project-specific Health and Safety Plan and a Project-specific Spill Prevention Plan will be developed by the construction contractor before work commences. The Health and Safety Plan will provide information on any hazardous materials that may be associated with Project construction and will outline safety procedures for handling these substances. The Spill Prevention Plan will identify actions the construction contractor will take to minimize the potential for spills during construction. Project specifications regarding discoveries of contaminated materials, dangerous wastes and Federal Toxic Substances Control Act wastes will be followed if unanticipated contaminated materials are encountered during construction.

b. Noise

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

Noise that exists in the area consists of traffic noise and potential construction noise. This noise will not affect Project construction or operation.

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 the site.

Noise from Project construction is anticipated to occur progressively through the Project footprint during the approximately 19-month Project construction period. Such noise, which would be caused by construction equipment and vehicles, would not exceed levels established in the Seattle Noise Control Code (see SMC Chapter 25.08). Because of various traffic, site and timing constraints, it is anticipated that construction work will need to occur during approximately 30 weekends over the course of the construction period and may also need to occur outside of standard

work hours, which are 7 a.m. to 10 p.m. on weekdays and 9 a.m. to 10 p.m. on weekends and holidays. When there is a need to work outside these standard times, OWCP and SDOT or the Project contractor will obtain the appropriate noise permits or variances for such work.

Noise from post-construction Project operation would occur from traffic traveling on streets within and near the Project footprint. Because the Project is not expected to increase vehicle trips or significantly change vehicle speeds in or near the Project footprint, traffic noise is anticipated to remain the same during Project operation as it is before Project construction.

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

The following measures may be used to minimize noise impacts during Project construction:

- Installation and maintenance of effective mufflers on equipment;
- Location of equipment and vehicle staging areas as far from residential and hotel properties as possible; and
- Minimization of idling of power equipment and vehicles when not in use.

8. Land and shoreline use

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

The current use of the site is for right of way developed with streets, bicycle lanes, sidewalks and driveways. The current use of adjacent properties is almost exclusively for low-, mid- and high- rise buildings used for retail, business, professional and residential purposes, including for the Washington State Convention Center. Adjacent properties are also used for several city-owned parks. While the Project will reallocate the use of the right of way among streets, bicycle lanes, sidewalks and driveways, the Project will not affect current land uses on nearby or adjacent properties.

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

No.

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

No.

c. Describe any structures on the site.

Structures on the Project site, which is right of way, generally consist of bus strain poles, luminaires, traffic signal poles, pedestrian luminaires, street signs, bus station shelters, parking pay stations and related signage, utility boxes, bridge railings, mail boxes, recycling and trash cans, newspaper vending machines, bicycle racks, fire hydrants, planters, benches, and underground utilities. Structures adjacent to the Project site are buildings and several parks. Structures crossing the Project footprint generally consist of two bridges over Pike Street between Seventh Avenue and Ninth Avenue/Convention Place that connect parts of the Washington State Convention Center. One bridge is enclosed, occupiable convention center space; the other is an open-air bridge for trucks and vehicles.

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

There will be an evaluation of existing structures on the Project site, including stormwater catch basins, inlets and connecting pipes. Some structures, like catch basins, inlets and connecting pipe, will be removed, replaced or relocated. These changes will be coordinated with appropriate agencies and entities. The Project will not demolish the bridges described in Section B.8.c, above, that cross the Project footprint.

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

The Project footprint has the following current zoning classifications:

- DMC-145, DMC 240/290-440 and DMC 340/290-440 - Downtown Mixed Commercial with height limits generally ranging from 145 to 440 feet depending on the building use, as defined in SMC Chapter 23.49, SMC Chapter 23.30 and SMC 23.49.008.
- DRC 85-170 and DRC 85-180 - Downtown Retail Core with height limits generally ranging from 85 to 180 feet depending on the building use, as defined in SMC Chapter 23.49, SMC Chapter 23.30 and SMC 23.49.008.
- DOC2 500/300-550 - Downtown Office Core 2 with height limits generally ranging from 300 to 550 feet depending on the building use, as defined in SMC Chapter 23.49, SMC Chapter 23.30 and SMC 23.49.008.
- HR (M) - Residential, Multifamily, Highrise with an "M" mandatory housing affordability suffix, as defined in SMC Chapter 23.45 and SMC 23.34.006.
- NC3P-75 (M) and NC3P-95 (M) - Neighborhood Commercial 3, pedestrian-designated, with a 75 or 95 foot general height limit and an "M" mandatory housing affordability suffix, as defined in SMC Chapter 23.47A, SMC 23.34.086, SMC Chapter 23.30 and SMC 23.34.006. The portion of the footprint with this zoning is also located in the Pike/Pine Conservation Overlay District, as defined in SMC Chapter 23.73.

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

The current comprehensive plan designation of the Project footprint is "Urban Centers," which are the densest Seattle neighborhoods and act as both regional centers and local neighborhoods that offer a diverse mix of uses, housing, and employment opportunities.

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

Not applicable.

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

The city has classified a small portion of the eastern part of the Project footprint as a steep slope area (40% or steeper).

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

None.

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

None.

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

Not applicable.

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

The Project is consistent, and therefore compatible, with existing land uses in the Project footprint. Further, the Project adheres to Seattle Streets Illustrated, the right of way improvements manual that helps those involved with the design, permitting and construction of Seattle's street right of way.

The Project footprint is part of the Priority Investment Network (PIN) in the Seattle Pedestrian Master Plan (2017). The PIN includes streets that serve as key pedestrian routes to frequent transit stops, with the foremost priority of the Pedestrian Master Plan being to ensure that a safe and comfortable pedestrian environment is provided on streets within the PIN. Because the Project will improve the pedestrian experience on Pike and Pine Streets by improving sidewalks to have safer, wider walking surfaces, additional lighting, ADA-compliant curb ramps, improved crosswalks, and more trees, the Project is compatible with the Pedestrian Master Plan.

The Pike Street portion of the Project's bicycle facilities is a Citywide Network Cycle Track bicycle facility recommended in the current Seattle Bicycle Master Plan (2014). The

Project's bicycle facilities are protected bicycle lanes (cycle tracks) and therefore will be compatible with the current Bicycle Master Plan. The Project's bicycle facilities will also connect or improve connections with the protected bicycle lane at Second Avenue, which is also a Citywide Network Cycle Track recommended in the current Bicycle Master Plan.

The Project's bicycle facilities on Pike and Pine Streets are consistent with the current Seattle Bicycle Master Plan's 2019 to 2024 Implementation Plan because the facilities will provide the primary bicycle connection between downtown and neighborhoods to the east, including Capitol Hill, as is shown in the Implementation Plan's Planned 2024 Bike Network.

The Project directly achieves policies of the Transportation element of the City's 2015-2035 Comprehensive Plan, adopted in November 2020 (see <http://www.seattle.gov/opcd/ongoing-initiatives/comprehensive-plan>). The Project's conversion of roadway space from general purpose traffic to the protected bike lane on Pike Street from Sixth to Ninth Avenues and to the likely lengthening of transit-only lanes, both described in A.11., above, are causes for the increased delay and worsening of LOSs described in B.14.d., below. However, the Comprehensive Plan Transportation element recognizes that Seattle, a mature, fully built city that already has a core network of streets and lacks room for major new streets or for widening arterial streets, must use streets and sidewalks in the most efficient way possible by prioritizing street space so it can be used by the most people, at most times of the day, and in a variety of ways. See Comp. Plan p. 73. The Project increases the variety of ways Pike and Pine Streets can be used by improving pedestrian, bicycle and likely transit facilities, in keeping with a number of Comprehensive Plan Transportation element policies. See, for example, Comp. Plan Transportation policies T 1.2, T 2.2, T 3.1, T 3.10, and T 3.11.

The Project likely contributes toward achieving policies of the Transportation element of the Comprehensive plan by converting general purpose traffic use to pedestrian, bicycle and likely transit facility use. The Comprehensive Plan has targets for vehicle mode shift from drive alone (single occupancy) vehicle trips to other modes such as bicycling and transit. The target for Seattle's downtown area is to have, by 2035, at least 85% of work-based trips and 90% of non-work based trips made by travel modes other than driving alone. See Comp. Plan Transportation policy T 1.5.

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

Not applicable.

9. Housing

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

No housing units would be provided.

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

No housing units would be eliminated.

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

Not applicable.

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 project will primarily construct improvements at ground level with taller improvements consisting of replacing or installing street furniture, signs, trees, and pedestrian lighting fixtures. The tallest structures the Project will construct are roadway luminaires and traffic signal poles, which would extend up to roughly 30 feet above grade.

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

None.

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

No impacts are anticipated so no measures are proposed.

11. Light and glare

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

The Project will install new I-5 bridge railings with integrated lighting; replace, on parts of Pike Street, existing three-globe pedestrian lighting fixtures with two-globe pedestrian lighting fixtures; install new two-globe pedestrian lighting fixtures; install new roadway luminaires; update existing traffic signal heads; remove some existing traffic signal poles; and upgrade existing traffic signals by replacing span wires with mast arms. The lighting will operate at night. The traffic signals will operate 24 hours per day.

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

No. The lighting installed by the Project will operate at night, will be designed to improve safety and will not interfere with views. The traffic signals will also be designed to improve safety and will not be bright enough to be noticed except by the traffic it is controlling.

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

None.

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

No impacts are anticipated so no measures are proposed.

12. Recreation

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

Recreational opportunities in the immediate vicinity of the Project footprint consist of Westlake Park, the Jim Ellis Freeway Park and Plymouth Pillars Park, three city-maintained parks located along Pike and Pine Streets. Westlake Park is owned by the city of Seattle; the other two parks are owned by WSDOT. Westlake Park is a triangular-shaped park with one side located on Fourth Avenue just at and south of Pine Street and one side located on Pine Street just at and east of Fourth Avenue. The Jim Ellis Freeway Park is a sprawling park located on lids over I-5, with the bulk of the park being between Seneca and Union Streets. A long narrow finger of the park extends north of Union Street and terminates at the intersection of Pike Street and Hubbell Place (Terry Avenue). Plymouth Pillars Park lies between Pike and Pine Streets east of and parallel to I-5 and west of Minor Avenue. The park includes a dog off-leash area between Boren Avenue and Pine Street. The park itself can be entered on Pike Street, Boren Avenue and Pine Street. The off-leash area can be accessed from Boren Avenue and Pike Street.

About a block from the Project footprint's southeast corner is The Northwest School, a private school located on the southern portion of the block bounded by E Pike Street, Crawford Place, E Union Street and Summit Avenue. The school appears to offer on-site indoor recreational opportunities to its students.

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

The Project will not displace any existing recreational uses. Construction work will generally occur within the right of way of Pike and Pine Streets. Portions of the entrances to Westlake Park, the Jim Ellis Freeway Park and Plymouth Pillars Park might be temporarily blocked by Project construction; however, it is anticipated that the remaining portions of the park entrances will allow full accessibility to the parks. The Project is far enough from The Northwest School that the Project is not anticipated to impact school operations.

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

Project construction will not affect the public's ability to use Westlake Park, the Jim Ellis Freeway Park or Plymouth Pillars Park, though Project construction might temporarily block portions of the park entrances. Blocking such areas will be kept to a minimum and will not prevent access to the parks. In addition, SDOT will obtain any required permit from WSDOT as well as a Revocable Use Permit from Seattle Parks and Recreation for Project construction. During Project construction, OWCP and SDOT will adhere to the conditions of such permits, which may dictate when and to what degree portions of park entrances may be blocked.

Project operation will promote the public's use of the parks by increasing pedestrian and bicycle use of Pike and Pine Streets.

13. Historic and cultural preservation

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

There are approximately 90 buildings and structures within the project's Area of Potential Impact (API). The API consists of parcels that abut Pike and Pine Streets that have sidewalks that the Project will widen or repair. Of these approximately 90 buildings and structures, about 60 are known to be over 45 years old or are listed in or are eligible for listing in national, state, or local preservation registers. Specifically, 11 are listed in the National Register of Historic Places (NRHP), 17 are considered eligible for listing in the Washington Heritage Register (WHR) or NRHP, 13 are City of Seattle Historic Landmarks, 16 are considered not eligible for WHR or NRHP listing, and the rest are of undetermined status. These buildings and structures do not include the Pike Place Public Market Historic District, an NRHP-listed district immediately west of the API. See Figure 2 for a map of the buildings and structures within the API; see Figure 3 for a list of the buildings and structures in the API that identifies the registers the buildings and structures are listed in or are eligible for listing in.

Areaways exist beneath parts of the sidewalks in the Project footprint. Areaways are historic features that have floors at approximately the basement level of adjacent buildings. Areaways were originally constructed as sidewalks when the adjacent streets were at the level of the areaway floor. As the street levels were raised, the areaway sidewalks were walled off from the streets and their volume was covered by sidewalks at the new street level, resulting in a covered underground sidewalk or areaway. The areaways within the API were evaluated in 2003 and found to be too heavily altered to be considered eligible for NRHP listing (WISAARD, 2020). The structural integrity of those areaways is in various stages of deterioration. See *Pike Pine Streetscape and Bicycle Improvements Project Areaways Evaluation Report* prepared by Chudgar Engineering Company (April 8, 2020). Because of the high costs of rebuilding or rehabilitating these areaways, the Project plans to impact at most about one areaway, which has a substandard sidewalk above the areaway.

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

One archaeological site, 45KI737, is known to exist in the Project footprint. The site is about 35 to 40 feet below the current ground surface and is considered potentially eligible for listing in the NRHP. Discovered during the cultural resources survey for Sound Transit's Link Light Rail Tunnel project (see NADB No. 1683093 in B.13.c., below) the site is associated with the settlement of the area during the late 19th and early 20th centuries. Infrastructure features at the site include what appear to be hillside street retaining structures or sluice walls with a segment of puncheon road between two of the retaining structures, plank sidewalks or boardwalks, and wooden storm and sewer drains. Two small diameter gas and water pipes were excavated from beside and below the puncheon road.

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the Department of Archaeology and Historic Preservation, archaeological surveys, historic maps, GIS data, etc.**

HNTB specialists (an archaeologist and an architectural historian) assessed the potential impacts of the Project to cultural and historic resources on and near the Project footprint by accessing, on December 4 and December 12, 2020, the online database "Washington Information System for Architectural and Archaeological Records Data" (WISAARD) and conducting records searches to identify known cultural resources and known structures and buildings in or near the Project footprint.

HNTB identified, and reviewed, five cultural resources studies conducted for areas including or within the project footprint. These studies are listed in Table 1, below. HNTB also reviewed Historic Property Inventory forms (HPIFs) while SDOT supplemented the WISAARD database results with City of Seattle historic landmarks information from GIS data layers. The results of the historic property and landmarks review are compiled in Figures 2 and 3.

Finally, HNTB reviewed an SDOT study assessing the structural integrity of areaways in the project area. See *Pike Pine Streetscape and Bicycle Improvements Project Areaways Evaluation Report* prepared by Chudgar Engineering Company (April 8, 2020).

Table 1. Previous Cultural Resources Studies Within the Project Footprint

NADB No.	Survey Project <i>Principal Investigator, Year, Affiliation</i>	Location	Methods
1339767	Denny Way/Lake Union Combined Sewer Overflow Control Project, Seattle, King County, Cultural Resources Assessment <i>Forsman, Leonard, 1997, Larson Anthropological/Archaeological Services</i>	T25N, R4E, Sections 29, 30, 31, and 32; T25N, R3E, Sections 24 and 25	Desktop Study
1339816	Central Link Light Rail Transit Project, Final Environmental Impact Statement <i>Courtois, Shirley, 1999, Courtois & Associates</i>	T25N, R4E, Section 32	Pedestrian survey and subsurface testing
1339836	Central Link Light Rail Transit Project, Final Environmental Impact Statement (Revision) <i>Courtois, Shirley, 1999, Courtois & Associates</i>	T25N, R4E, Section 32	Pedestrian survey and subsurface testing
1353456	Similkameen River Railroad Corridor Cultural Resources Survey Report <i>Rooke, Lara, 2002, Cascadia Archaeology</i>	T25N, R4E, Section 31	Pedestrian survey
1683093	Archaeological Investigations at Old Pine Street (45-KI-737), Seattle, King County, Washington <i>Hoyt, Bryan, 2012, ESA Paragon</i>	T25N, R4E, Section 32	Monitoring and Data Recovery

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

To avoid, minimize, or compensate for loss, changes to, and disturbance of resources, OWCP and SDOT will

- Obtain and implement any requirements of a Seattle Landmarks Adjacency Review by the Seattle Department of Neighborhoods;
- Obtain and implement any requirements of any necessary approvals or Memorandum of Agreement from DAHP for work next to NRHP or WHR eligible or listed properties or in any NRHP or WHR eligible or listed areaways;
- Require the Project contractor to adhere to Section 1-07.5(5), Archaeological and Historic Preservation, of the applicable edition of the City of Seattle Standard Specifications for Road, Bridge, and Municipal Construction; and
- Implement the Cultural Resources Inadvertent Discovery Plan prepared for the Project.

14. Transportation

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

In most of the Project footprint, Pike and Pine Streets are principal arterial streets. These streets can be accessed from any of the fourteen streets that cross them from First Avenue to the west to Bellevue Avenue to the east. Eleven of these cross streets are arterial streets; four of these arterial streets are principal arterial streets. I-5 serves the Project footprint via a high occupancy vehicle (HOV) express lane ramp at Pike Street and Ninth Avenue. The ramp serves southbound traffic exiting I-5 in the morning and northbound traffic entering I-5 in the afternoon. Several blocks to the north and south of the Project footprint are general purpose I-5 on and off ramps. See Figure 1, Project Footprint, attached.

During construction, access to and from the Project area will be maintained. Intermittent lane closures are expected on Pike and Pine Streets and on some side streets approaching Pike and Pine Streets. Full closures of streets in the Project area are anticipated to be minimal. Detours will be provided for any full closures. Access to the I-5 HOV express lane ramp at Pike Street and Ninth Avenue is anticipated to be maintained at all times.

During post-construction Project operation, access to and from the Project area will generally be the same as before Project construction started. Access to the Pike and Pine Street corridors will be modified by the extension of the one-way couplet from First to Bellevue Avenues: circulation in the area will be adjusted but access will be similar.

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

A number of public transit modes and associated stops currently serve the Project footprint or the area near it. Sound Transit's underground Westlake Link light rail station is located within the Project footprint on Pine Street with station entrances existing between Third and Sixth Avenues. Numerous Sound Transit Express, Community Transit, and King County Metro bus routes cross or travel along parts of Pike and Pine Streets. The Monorail's Westlake Center Station is located on Fifth Avenue just north of Pine Street. The South Lake Union Streetcar's Westlake Hub stop is approximately two blocks north of Pine Street on Westlake Avenue between Fifth and Sixth Avenues. Several Sound Transit Express bus routes travel along parts of Union Street, one block south of Pike Street.

Although all of the above described public transit modes are currently operating, some of the routes are operating at reduced service, and some have been temporarily discontinued, due to the Covid-19 pandemic. In addition, some King Country Metro bus routes will change once the Northgate Link light rail station opens in late 2021.

Project construction could temporarily relocate routes or stops of public transit modes in the Project during the intermittent lane closures and minimum full street closures described in B.14.a., above. Project construction will permanently remove the eastbound bus stop on Pine Street between Eighth and Ninth Avenues, with the stop's function being served by an existing bus stop on Pike Street. Project construction might permanently alter other bus routes or stops.

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

The completed Project will both remove and add parking spaces. It is anticipated that approximately eight spaces will be removed from Pike Street between Sixth and Ninth Avenues and that approximately twenty spaces will be added on Pike Street, about two of which will be added between First and Second Avenues and about eighteen of which will be added between Terry and Bellevue Avenues. The Project is thus currently anticipated to add a total of approximately twelve parking spaces though this could change as Project designs progress.

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

The Project will construct the improvements to streets, and to bicycle and pedestrian facilities, described in A.11., above. In extending to Melrose and Bellevue Avenues the one-way arterial couplet on Pike and Pine Streets, the Project will change the following street segments from carrying two-way traffic to carrying one-way traffic:

- Pike Street: convert from two-way traffic to one-way eastbound traffic the section of the street from Terry Avenue to Bellevue Avenue
- Pine Street: convert from two-way traffic to one-way westbound traffic the section of the street from Melrose Avenue to Eighth Avenue

The Project is not anticipated to install traffic signals where none currently exist. The Project will remove traffic signals that are no longer needed because of the changes in traffic flow direction, will update traffic signal heads, and will upgrade other traffic signals with mast arm traffic signals. Traffic signal programming will be revised to maximize pedestrian, bicycle and transit safety and vehicle flow.

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

The Project will not use water, rail or air transportation during construction or during post-construction operation. The Project occurs in the vicinity of rail transportation as described in B.14.b., above.

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

The completed Project is not anticipated to generate any vehicular trips per day. However, as described in B.14.d., above, changes to vehicle travel routes will occur within the Project footprint.

Peak volumes within the Project footprint occur in the morning and in the afternoon. The *Pike Pine Streetscape and Bicycle Improvements Traffic Analysis Technical Memorandum (Draft)*, prepared for ZGF by Concord Engineering (March 27, 2020), compares the anticipated 2024 traffic conditions without the Project (the Baseline condition) to traffic conditions anticipated in 2024 after Project construction is completed (the Alternative conditions). The memorandum studies two alternatives, the Alternative 1 condition and the Alternative 2 condition. The two alternative conditions differ by the amount of reduction of King County transit service provided, with the amounts being independent of the traffic flow changes created by the Project. The Alternative 1 condition has a “medium” level of volume reduction on transit routes traveling north from downtown Seattle via the I-5 HOV on-ramp at Pike Street and Ninth Avenue. The Alternative 2 condition has a “high” level of volume reduction on such transit routes. Because the medium and high transit volume change scenarios apply only to the afternoon peak period, the Baseline condition is compared only to the Alternative 1 condition for the morning peak volumes but to both alternative conditions for the afternoon peak volumes. The *Pike Pine Streetscape and Bicycle Improvements Traffic Analysis Technical Memorandum (Draft)* analyzes Baseline and alternative conditions for intersections within the Project footprint as well as for intersections along Pike and Pine Streets to the east of the Project footprint. The intersections analyzed by the *Pike Pine Streetscape and Bicycle Improvements Traffic Analysis Technical Memorandum (Draft)* are shown in Figure 4, attached.

During the morning peak period, operations at all but two intersections within the Project footprint (the intersections of Pike Street with Minor and Bellevue Avenues) would improve (experience less traffic delay) under the Alternative 1 condition compared to the Baseline condition. Under the Alternative 1 condition, the two-way to one-way conversion on Pike and Pine Streets and the associated traffic diversion will result in increased traffic east of Boren for the eastbound traffic on Pike Street and the westbound traffic on Pine Street. However, it is anticipated that all intersections will still operate within acceptable levels of service (LOSs) with the increased traffic.

During the afternoon peak period, under the Alternative 1 condition, operations along Pine Street in the Project footprint (i.e., west of Bellevue Avenue) would improve over the Baseline condition. Intersection delay would be similar to, or less than, the Baseline condition at most intersections and westbound travel times would decrease. However, most intersections on Pine Street east of Bellevue Avenue would experience an increase in delay under the Alternative 1 condition due to the additional westbound traffic on Pine Street resulting from the two-way to one-way conversion of Pine Street from Melrose to First Avenues. In the eastbound direction, Pike Street is anticipated to experience higher

travel times and an increase in intersection delay in the Project footprint (i.e., from First to Bellevue Avenues). This is due to a decrease in capacity along Pike Street near Eighth Avenue to accommodate the protected bike lane and some increased eastbound traffic on Pike Street due to the two-way to one-way conversion of Pike Street from First to Bellevue Avenues. Under the Alternative 1 condition, several intersections on Pike Street in the Project footprint would have a delay that is similar to, or slightly increased, from the Baseline condition, with LOS degradation being minor at most intersections. However, two intersections would have more marked degradation. The Pike Street and Sixth Avenue intersection LOS would degrade from E to F and the Pike Street and Boren Avenue intersection LOS would degrade from D to E. Under the Alternative 2 condition, the intersections between Fourth and Ninth Avenues on Pike Street would operate with slightly less delays than in the Alternative 1 condition due to the reduction in transit volumes.

Figure 5 shows the LOS and delay values for the afternoon peak volumes for the intersections analyzed by the *Pike Pine Streetscape and Bicycle Improvements Traffic Analysis Technical Memorandum* (see Figure 4).

The above described analysis was performed using Synchro 10 for the morning peak analysis and VISSIM 11 models for the afternoon peak analysis. The VISSIM calibration process followed FHWA Traffic Microsimulation Guidelines and WSDOT's VISSIM Simulation Protocol.

As is discussed in Section B.8.I., above, it is expected that the Project will likely indirectly convert single-occupancy vehicle use to other modes. Although the *Pike Pine Streetscape and Bicycle Improvements Traffic Analysis Technical Memorandum (Draft)* did not assume any reduction in single occupancy vehicles, with the expansion of the protected bike lane and the reduction in capacity for single occupancy vehicles, it could be expected that single occupancy vehicles would be reduced. Other projects in the downtown area that have added bike lanes have shown a reduction in general purpose traffic volumes. Along Second Avenue, the peak volumes reduced by about 10%. On Pike Street west of Sixth Avenue, where a bike lane has already been added, PM peak volumes reduced by about 12% after the bike lanes were added. SDOT could expect a similar traffic reduction on Pike Street east of Sixth Avenue. This would reduce the delay and worsening of LOS attributable to the Project. With the reduction in traffic volumes, it could be expected that the intersections of Pike Street and Sixth Avenue and Pike Street and Boren Avenue would operate like the Baseline condition.

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

No.

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

The following measures may be used to reduce or control transportation impacts during

Project construction:

- OWCP and SDOT will conduct public outreach before and during project construction to notify residents, businesses, local agencies, transit agencies, and other stakeholders of expected traffic flow disruptions or changes.
- The construction contractor will submit a traffic control plan, for approval by OWCP and SDOT, pursuant to the applicable version of the Seattle Standard Specifications for Road, Bridge and Municipal Construction. The contractor will implement the traffic control plan during Project construction.
- All traffic control will be in accordance with the appropriate version of the City of Seattle Traffic Control Manual for In-Street Work.
- The contractor, OWCP and SDOT will work to plan and implement construction-related detours to minimize disruptions, maintain adequate access and be marked by proper signage.
- Any proposed effects to transit will be coordinated in advance with the appropriate agencies.
- Alternative routes for pedestrians, bicyclists and those with disabilities will be identified and marked clearly.
- OWCP and SDOT will inform adjacent property owners of work progress.

The following measures may be used to reduce or control transportation impacts during Project operation:

- SDOT may reduce or control transportation impacts during Project operation by altering traffic signal operations to improve safety and efficiency of travel for pedestrians, bicycles and vehicles.
- When needed, temporary road closures will be minimized, and detour routes will have proper signage.
- All traffic control will be in accordance with the appropriate version of the City of Seattle Traffic Control Manual for In-Street Work.

15. Public services

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

The Project would not result in an increased need for public services.

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

No measures are proposed.

16. Utilities

a. Utilities currently available at the site, if any: *[Check the applicable boxes]*

- | | | | | |
|---|--|---|---|--|
| <input type="checkbox"/> None | <input checked="" type="checkbox"/> Electricity | <input checked="" type="checkbox"/> Natural gas | <input checked="" type="checkbox"/> Water | <input checked="" type="checkbox"/> Refuse service |
| <input checked="" type="checkbox"/> Telephone | <input checked="" type="checkbox"/> Sanitary sewer | <input type="checkbox"/> Septic system | | |
| <input type="checkbox"/> Other (identify) | | | | |

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

The Project will relocate and add stormwater inlets and catch basins and will install pipes to connect the inlets and catch basins to existing Seattle Public Utilities (SPU) drainage and sewer lines. Public and private utilities will be identified and avoided where feasible during Project construction.

C. SIGNATURE

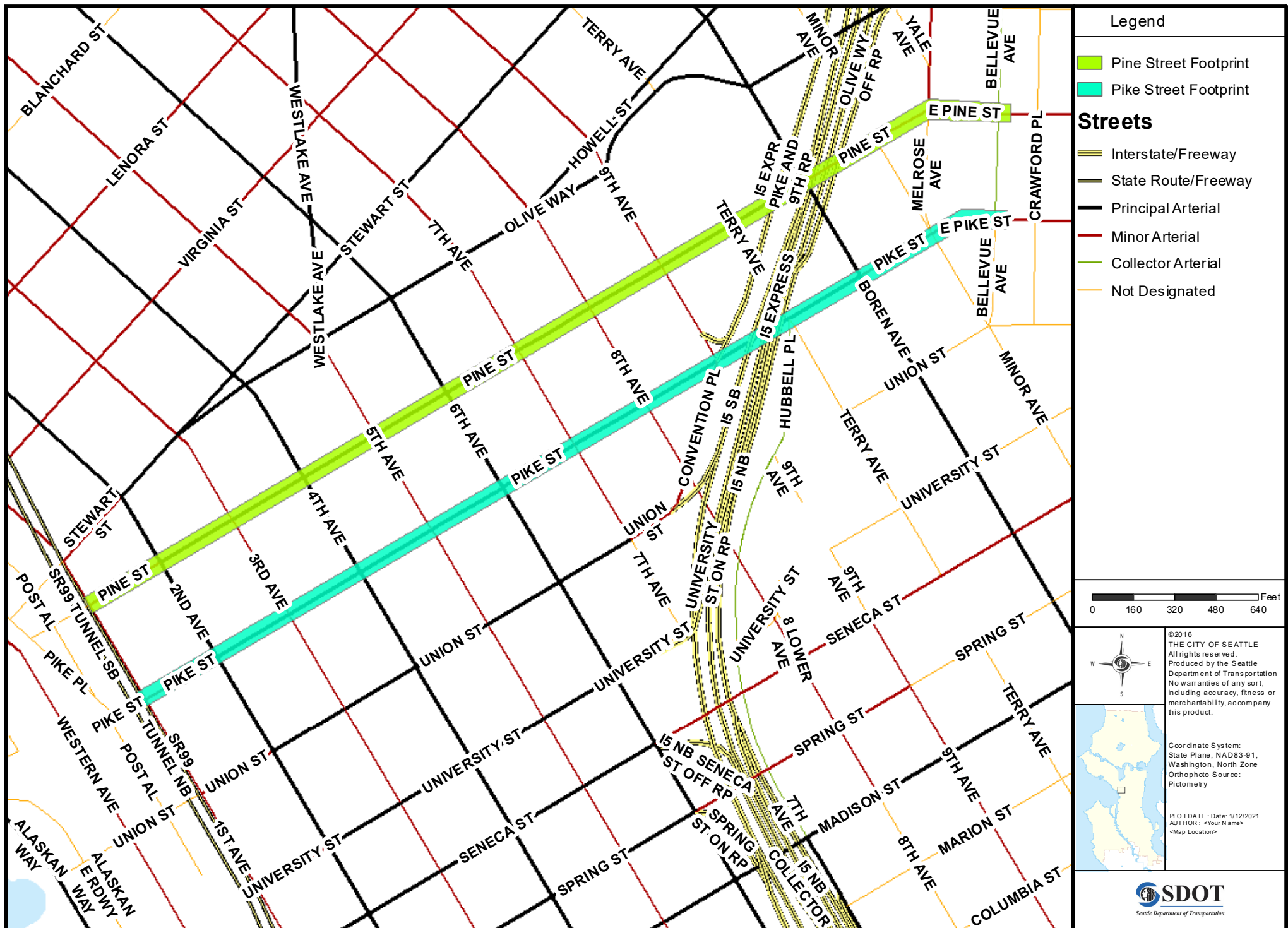
The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:

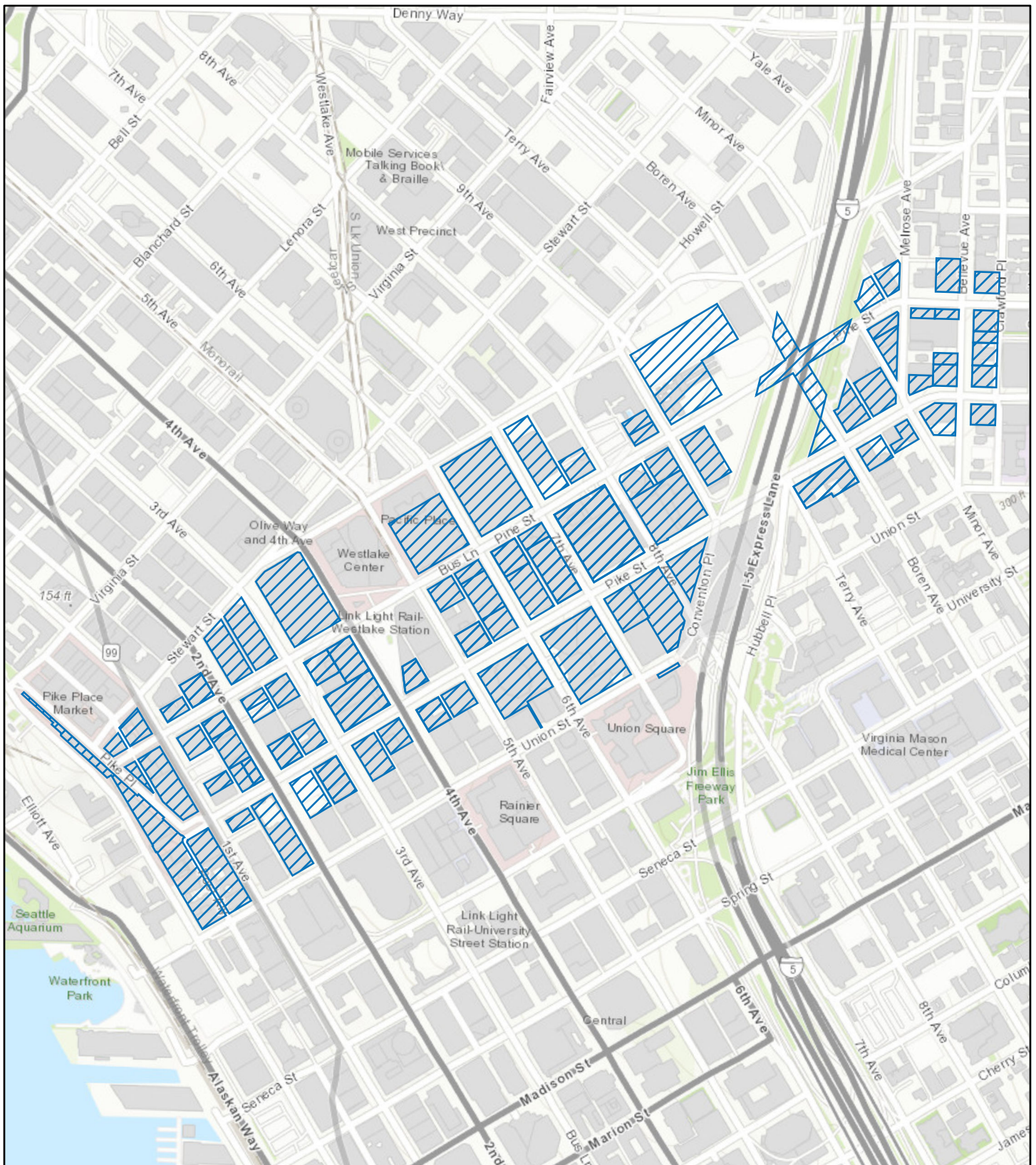
Date Submitted: February 5, 2021

Attachments:

- Figure 1 – Project Footprint
- Figure 2 – Buildings and Structures Map
- Figure 3 – Buildings and Structures List
- Figure 4 – Intersections Analyzed by Traffic Analysis (Study Area)
- Figure 5 – PM Peak LOS Values Analyzed by Traffic Analysis

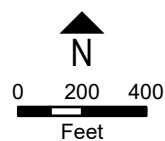


Pike Pine Streetscape & Bicycle Improvements Project Figure 1 - Project Footprint



 Identified Properties

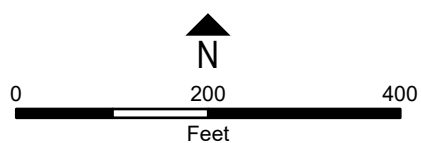
Figure 2 - Buildings and Structures Map
Pike Pine Streetscape & Bicycle Improvements Project





Identified Properties

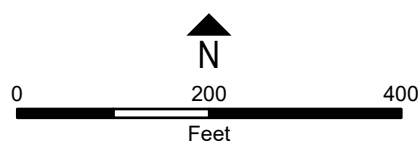
Figure 2 - Buildings and Structures Map
Pike Pine Streetscape & Bicycle Improvements Project





 Identified Properties

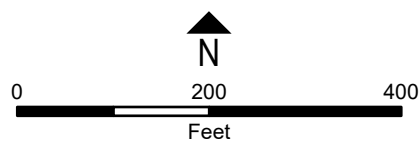
Figure 2 - Buildings and Structures Map
Pike Pine Streetscape & Bicycle Improvements Project





 Identified Properties

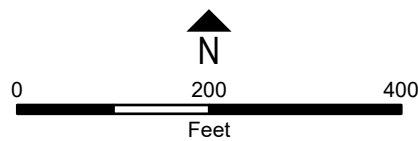
Figure 2 - Buildings and Structures Map
Pike Pine Streetscape & Bicycle Improvements Project





 Identified Properties

Figure 2 - Buildings and Structures Map
Pike Pine Streetscape & Bicycle Improvements Project





 Identified Properties

Figure 2 - Buildings and Structures Map
Pike Pine Streetscape & Bicycle Improvements Project

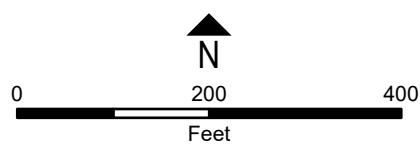


Figure 3 - Buildings and Structures List
Pike Pine Streetscape and Bicycle Improvements Project

MAP ID	Property ID	Resource ID	Year Built	Resource name	Common Name	Address	Eligibility ¹
PIKE STREET							
1	99131	55517		Elliot Hotel	Hahn Building	103 Pike St.	E
2	99072	55459	1915	G.W. Yancy Building	Hard Rock Cafe	114 Pike St.	NE
3	44183	34503	1919	Graham, J.S., Store	Doyle Building	119 Pine St.	NRHP listed*
4	44150	34470	1963	Areaway associated with building	Second & Pike Parking Garage	200 Pike St.	U (recommended NE in 03)
5			2016			203 Pike St.	U
6	44185	34505	1910	Haight Building	2nd and Pine Apartments	211 Pine St.	E
7	53444	42307	1923	Kress Store	Kress Store	211-215 Pike St.	NE
8	717966	691842		Motors Distributing Co.	Six Arms Pub	300 E. Pike St.	U
9						301 Pike St.	U
10			1998			303 Pike St.	U
11	339246	287024		Cummings Motor Car Co.	Benson Grocery	310 E. Pike St.	U
12	44153	34473	1915-1920		Northwest Frame Alignment	310/320 E. Pike St.	U
13			1909			400 Pike St.	U
14	44154	34474	1901-1904	Dwyer Apts.		401-411 E. Pike St.	U
15	53395	42265	1929	Ben Bridge Jewelers Clock	Ben Bridge Jewelers Clock	409 Pike St.	E*
16			1984			425 Pike St.	U
17	45101	35371	1914	Coliseum Theater		Fifth Ave. and Pike St.	NRHP listed*
18			1983			520 Pike St.	U
19			1996			610 Pike St.	U
20			1982	Sheraton Hotel		629 Pike St.	U

MAP ID	Property ID	Resource ID	Year Built	Resource name	Common Name	Address	Eligibility ¹
91			2001	One Convention Place (Condos)		701 Pike St.	NE
21	44190	34509	1906	Waldorf Hotel	Waldorf Towers	706 Pike St.	E
22	53438	42304	1925	The Mountaineers Building	The Mountaineers Building	715 Pike St.	NE
23			1991			1011 Pike St.	U
24	44167	34487	1904	Crest Hotel		1019-1025 Pike St.	U
86	70581					1101 E. Pike St.	
25	675042	621535		Villa Apartments	Villa Apartments	1106 Pike St.	E
26	47974	38169		Packard Seattle dealership	Starbuck's	1120 Pike St.	U
PINE STREET							
27	44181	34501	1910	Afton Hotel	Atwood Apartments	104 Pine St.	NE
28	44182	34502	1910	Colonnade Hotel	Gatewood Hotel	107 Pine St.	NRHP listed*
29	44187	34506	1929	United Shopping Tower	Olympic Tower	217 Pine St.	NRHP listed*
30	86534	46372		Metro Bus Tunnel Entrance		Third Ave. & Pine St.	NE
31	44188	34507	1929	Areaways Associated with Building	Bon Marche Department Store	300 Pine St.	NRHP listed bldg* (areaways recommended NE in 03)
32	48018	38211	2015	Melrose Building	Excelsior Apartments	301 E. Pine	U
33	47972	38167		Pineview Apartments	Le Frock	311-321 E. Pine St.	U
82			2014			320 E. Pine St.	U
81			1917			400 E. Pine St.	U
34	44193	34512	1915-1920	Coleman Automotive	Raffs Shoes	401 E. Pine St.	NRHP listed

MAP ID	Property ID	Resource ID	Year Built	Resource name	Common Name	Address	Eligibility ¹
35	45104	35374	1916-1918	Frederick and Nelson Department Store	Nordstrom Building	Fifth Ave. & Pine St.	NE*
36	44189	34508	1910	O'Shea Building	O'Shea Building	501 Pine St.	E
37	44194	34513	1923-1924	Shafer Building		523 Pine St.	NRHP listed*
38	665824	612938	1929-1954	I. Magnin Building	Old Navy- Forever 21	601 Pine St.	NE
39	86592	46430				601 Pine St.	NE
74			1996			724 Pine St.	U
40	675803	622252		Tower 801		801 Pine St.	U
41	44195	34514	1928	Pine St. Properties	Pande Cameron and Co.	815 Pine St.	NE
42	44179	34499	1978	Yuen Lui Studio Building	Yuen Lui Studio	904 Pine St.	U
43	44191	34510	1928	Paramount Theater	Paramount Theater	911 Pine St.	NRHP listed*
44	720059	697361		Pine St. & Boren Ave. Bridge		E. Pine St.	U
89			1912			1201 Pine St.	E
84			2020			1208 E. Pine St.	U
83			1967			1216 E. Pine St.	U
FIRST AVENUE							
45	341429	289199		Economy Market		1423 First Ave.	E
46	344525	292291		Corner Market (Pike Place Market HD)		1501 First Ave.	NRHP listed*
47	44887	35170	1922	Broderick Building	Broderick Building	1502 First Ave.	NE
SECOND AVENUE							
88			1991			1401 Second Ave.	U
48	99071	55458	1904	Eitel Building	Eitel Building	1501 Second Ave.	E*
49	344664	292429	1964	Second & Pike Parking Garage	Second & Pike Parking Garage	1508 Second Ave.	E

MAP ID	Property ID	Resource ID	Year Built	Resource name	Common Name	Address	Eligibility ¹
50	44971	35249	1910	Eitel Building - Areaways	Second & Pike Building	1511 Second Ave.	U (recommended NE in 03)
51	44973	35251	1909	Areaways associated with building	Forest Hotel	1521 Second Ave.	U (recommended NE in 03)
52	44974	35252	1919	A.E. Doyle Building - Areaways	Doyle Building	1527 Second Ave.	U
53	44975	35253	1910	Haight Building	Second and Pine Building	1530 Second Ave.	E
54	44976	35254	1908	Standard Furniture Co. - Areaways	Nordstrom Rack	1601 Second Ave.	NE
55	44977	35255	1906	Shoenfelds' Standard Furniture Co. Building	Nordstrom Rack	1601 Second Ave.	U
56	44978	35256		Surface Parking Lot		1608 Second Ave.	NE
THIRD AVENUE							
57			1924			1419 Third Ave.	U
58	344638	292404		Republic Building	Melbourne Tower	1511 Third Ave.	E
59	45011	35286	1911	Sherman-Clay Block	McDonald's	1530 Third Ave.	NE
77			1959	Bon Marche Garage		1601 Third Ave.	NE
FOURTH AVENUE							
60	45052	35326	1920	Liggett Building	Fourth and Pike Building	1424 Fourth Ave.	NRHP listed*
61	45053	35327	1910	Joshua Green Building	Joshua Green Building	1425 Fourth Ave.	E*
62	344534	292300	1906	Northern Bank and Trust Building	Seaboard Building	1500 Fourth Ave.	NRHP listed*
63			1985			1501 Fourth Ave.	U
64	45055	35328	1915	Zedick Jewelers Street Clock	Century Square Clock	1529 Fourth Ave.	E
65	45056	35329	1920	The Gap		1531 Fourth Ave.	NE
FIFTH AVENUE							
66			1989			1420 Fifth Ave.	U

Figure 3 - Buildings and Structures List

MAP ID	Property ID	Resource ID	Year Built	Resource name	Common Name	Address	Eligibility ¹
SIXTH AVENUE							
67	45166	35432	1921	Decatur Building	Pay and Save Corp.	1521 Sixth Ave.	E
92			1999	Pacific Place Condos	also 600 Pine	1612 Sixth Ave.	U
SEVENTH AVENUE							
68			1996			1501 Seventh Ave.	U
69			2003			1519 Ninth St.	U
70	53381	42252	1914	Earlington Apartments	Payne Apartments	1521 Seventh Ave.	E
71	45169	35435	1930	Roosevelt Hotel	Hotel Theodore	1531 Seventh Ave.	U
75			1976			1600 Seventh Ave.	U
NINTH AVENUE							
76 / 90			2014		820 Pine St.	1601 Ninth Ave.	U
BOREN AVENUE							
72	49107	39215		Boren/ Pike/ Pine Park	Plymouth Pillars Park	Boren Ave.	U
BELLEVUE AVENUE							
79	42793		1910	First Covenant		1500 Bellevue Ave.	U
78	87168		1926	McDermott Apt.		1514 Bellevue Ave.	U
80			1925			1515 Bellevue Ave.	U
73			1918			1520 Bellevue Ave.	U
MELROSE AND MINOR AVENUES							
85	343114		1912			1501 Melrose Ave.	U
87	44034			Wintonia Hotel		1431 Minor Ave.	E

1. Eligibility Symbols:

NRHP listed = listed on the National Register of Historic Places (NRHP)

* = City Landmark

E = Eligible for listing on the NRHP

NE = Not Eligible for listing on the NRHP

U = Undetermined

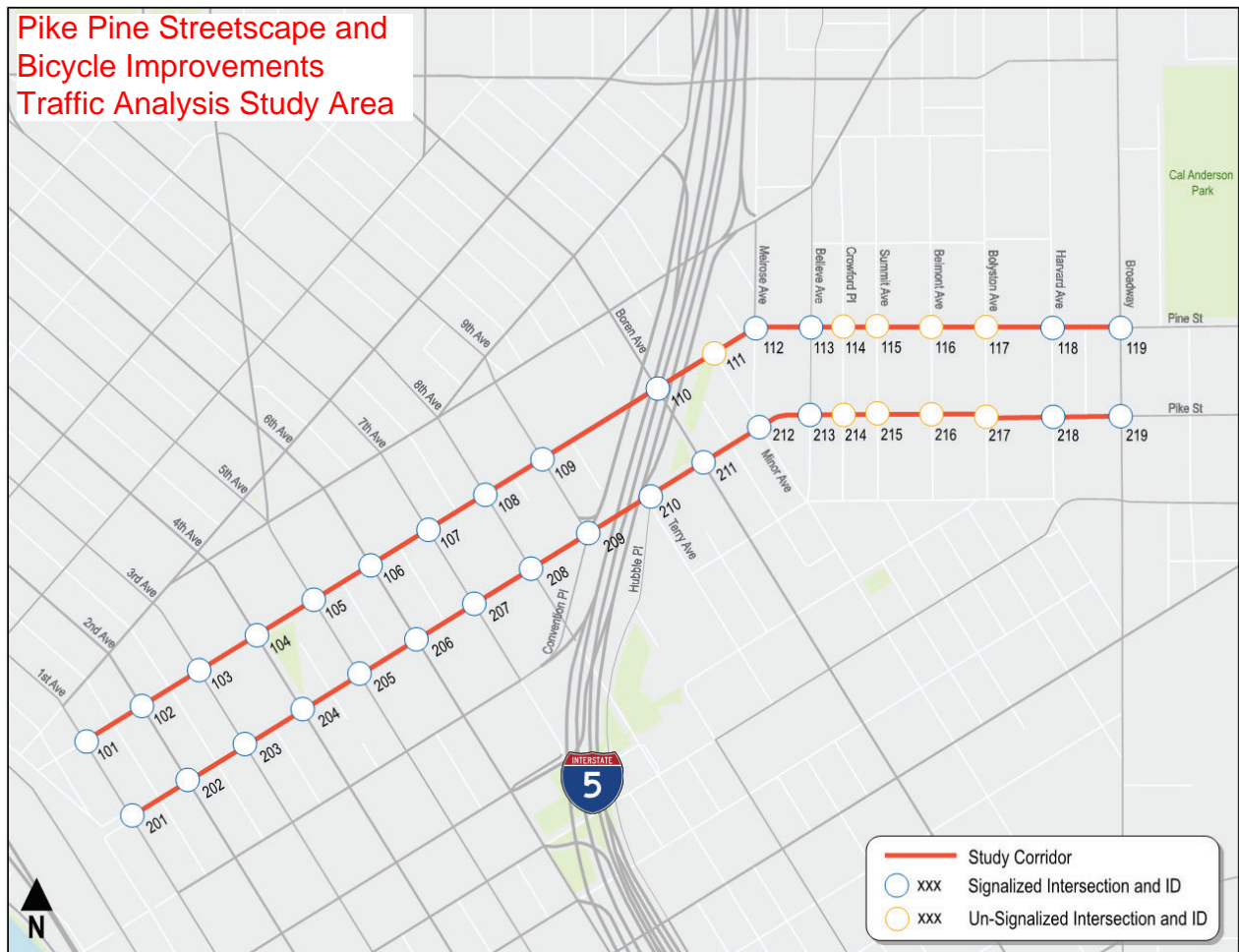


Figure 4 - Intersections Analyzed by Traffic Analysis (Study Area)

Source: Exhibit 1.1, *Pike Pine Streetscape and Bicycle Improvements Technical Memorandum (Draft)* for ZGF prepared by Concord Engineering (March 27, 2020)

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

Source: VISSIM PM Peak Scenarios Modeling Summary Table 2 - Delay and LOS from *Pike Pine Streetscape and Bicycle Improvements Technical Memorandum (Draft)* for ZGF prepared by Concord Engineering (March 27, 2020)

Intx No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
101	1st Ave & Pine St	Signal	Intersection	17	B	17	B	17	B
101	1st Ave & Pine St	Signal	SBR	23	C	24	C	23	C
101	1st Ave & Pine St	Signal	SBT	12	B	13	B	12	B
101	1st Ave & Pine St	Signal	EBR	19	B	20	B	19	B
101	1st Ave & Pine St	Signal	NBT	22	C	21	C	22	C
101	1st Ave & Pine St	Signal	NBL	23	C	23	C	23	C
101	1st Ave & Pine St	Signal	WBR	12	B	14	B	14	B
101	1st Ave & Pine St	Signal	WBT	19	B	20	C	22	C
101	1st Ave & Pine St	Signal	WBL	25	C	27	C	27	C
102	2nd Ave & Pine St	Signal	Intersection	40	D	44	D	41	D
102	2nd Ave & Pine St	Signal	SBR	23	C	23	C	23	C
102	2nd Ave & Pine St	Signal	SBT	31	C	37	D	33	C
102	2nd Ave & Pine St	Signal	WBT	81	F	77	E	79	E
102	2nd Ave & Pine St	Signal	WBL	87	F	80	F	81	F
103	3rd Ave & Pine St	Signal	Intersection	74	E	66	E	64	E
103	3rd Ave & Pine St	Signal	SBR	26	C	25	C	25	C
103	3rd Ave & Pine St	Signal	SBT	26	C	26	C	28	C
103	3rd Ave & Pine St	Signal	NBT	26	C	26	C	25	C
103	3rd Ave & Pine St	Signal	WBR	52	D	44	D	42	D
103	3rd Ave & Pine St	Signal	WBT	77	E	69	E	66	E
104	4th Ave & Pine St	Signal	Intersection	28	C	28	C	27	C
104	4th Ave & Pine St	Signal	NBT	17	B	17	B	18	B
104	4th Ave & Pine St	Signal	NBL	52	D	53	D	46	D
104	4th Ave & Pine St	Signal	WBR	75	E	77	E	65	E
104	4th Ave & Pine St	Signal	WBT	96	F	88	F	78	E
105	5th Ave & Pine St	Signal	Intersection	37	D	28	C	23	C
105	5th Ave & Pine St	Signal	SBT	33	C	21	C	17	B
105	5th Ave & Pine St	Signal	WBT	55	E	49	D	44	D
105	5th Ave & Pine St	Signal	WBL	31	C	24	C	25	C
106	6th Ave & Pine St	Signal	Intersection	83	F	85	F	78	E
106	6th Ave & Pine St	Signal	NBT	96	F	104	F	95	F
106	6th Ave & Pine St	Signal	NBL	>150	F	>150	F	>150	F
106	6th Ave & Pine St	Signal	WBR	10	B	9	A	8	A
106	6th Ave & Pine St	Signal	WBT	56	E	49	D	50	D
107	7th Ave & Pine St	Signal	Intersection	135	F	127	F	127	F
107	7th Ave & Pine St	Signal	SBR	53	D	49	D	45	D
107	7th Ave & Pine St	Signal	SBT	>150	F	>150	F	>150	F
107	7th Ave & Pine St	Signal	NBL	108	F	73	E	69	E
107	7th Ave & Pine St	Signal	WBT	50	D	57	E	51	D
107	7th Ave & Pine St	Signal	WBL	74	E	106	F	88	F
108	8th Ave & Pine St	Signal	Intersection	36	D	32	C	30	C
108	8th Ave & Pine St	Signal	NBT	29	C	27	C	27	C
108	8th Ave & Pine St	Signal	NBL	56	E	82	F	60	E
108	8th Ave & Pine St	Signal	WBR	34	C	21	C	23	C

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
108	8th Ave & Pine St	Signal	WBT	51	D	42	D	45	D
108	8th Ave & Pine St	Signal	NBR	31	C	N/A	N/A	N/A	N/A
109	9th Ave & Pine St	Signal	Intersection	34	C	53	D	48	D
109	9th Ave & Pine St	Signal	SBR	38	D	59	E	37	D
109	9th Ave & Pine St	Signal	SBT	19	B	28	C	21	C
109	9th Ave & Pine St	Signal	EBR	18	B	N/A	N/A	N/A	N/A
109	9th Ave & Pine St	Signal	WBT	54	D	58	E	62	E
109	9th Ave & Pine St	Signal	WBL	38	D	40	D	40	D
109	9th Ave & Pine St	Signal	EBT	19	B	N/A	N/A	N/A	N/A
109	9th Ave & Pine St	Signal	SBL	15	B	N/A	N/A	N/A	N/A
110	Boren Ave & Pine St	Signal	Intersection	55	D	59	E	57	E
110	Boren Ave & Pine St	Signal	SBR	27	C	82	F	62	E
110	Boren Ave & Pine St	Signal	SBT	19	B	57	E	65	E
110	Boren Ave & Pine St	Signal	EBR	57	E	N/A	N/A	N/A	N/A
110	Boren Ave & Pine St	Signal	NBT	76	E	21	C	16	B
110	Boren Ave & Pine St	Signal	NBL	>150	F	>150	F	>150	F
110	Boren Ave & Pine St	Signal	WBR	39	D	60	E	74	E
110	Boren Ave & Pine St	Signal	WBT	81	F	46	D	39	D
110	Boren Ave & Pine St	Signal	WBL	86	F	79	E	57	E
110	Boren Ave & Pine St	Signal	NBR	69	E	N/A	N/A	N/A	N/A
110	Boren Ave & Pine St	Signal	EBT	58	E	N/A	N/A	N/A	N/A
110	Boren Ave & Pine St	Signal	SBL	39	D	N/A	N/A	N/A	N/A
110	Boren Ave & Pine St	Signal	EBL	38	D	N/A	N/A	N/A	N/A
111	Minor Ave & Pine St	TWSC	Intersection	54	F	37	E	23	C
111	Minor Ave & Pine St	TWSC	EBR	22	C	N/A	N/A	N/A	N/A
111	Minor Ave & Pine St	TWSC	NBL	133	F	37	E	46	E
111	Minor Ave & Pine St	TWSC	WBT	19	C	10	B	14	B
111	Minor Ave & Pine St	TWSC	WBR	15	C	8	A	19	C
111	Minor Ave & Pine St	TWSC	NBR	143	F	N/A	N/A	N/A	N/A
111	Minor Ave & Pine St	TWSC	EBT	24	C	N/A	N/A	N/A	N/A
112	Melrose Ave & Pine St	Signal	Intersection	43	D	44	D	45	D
112	Melrose Ave & Pine St	Signal	WBR	51	D	28	C	28	C
112	Melrose Ave & Pine St	Signal	WBL	70	E	85	F	39	D
112	Melrose Ave & Pine St	Signal	SBL	28	C	55	E	50	D
112	Melrose Ave & Pine St	Signal	SBT	31	C	59	E	49	D
112	Melrose Ave & Pine St	Signal	NBR	14	B	11	B	10	A
112	Melrose Ave & Pine St	Signal	NBT	14	B	30	C	26	C
112	Melrose Ave & Pine St	Signal	EBT	44	D	N/A	N/A	N/A	N/A
112	Melrose Ave & Pine St	Signal	EBR	37	D	N/A	N/A	N/A	N/A
112	Melrose Ave & Pine St	Signal	EBL	49	D	N/A	N/A	N/A	N/A
112	Melrose Ave & Pine St	Signal	NBL	29	C	36	D	42	D
112	Melrose Ave & Pine St	Signal	SBR	51	D	68	E	68	E
112	Melrose Ave & Pine St	Signal	WBT	65	E	27	C	29	C
113	Bellevue Ave & Pine St	Signal	Intersection	39	D	56	E	58	E
113	Bellevue Ave & Pine St	Signal	WBR	40	D	35	D	37	D
113	Bellevue Ave & Pine St	Signal	WBL	36	D	35	D	39	D

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

Intx No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
113	Bellevue Ave & Pine St	Signal	WBT	55	D	35	C	40	D
113	Bellevue Ave & Pine St	Signal	SBL	60	E	121	F	122	F
113	Bellevue Ave & Pine St	Signal	SBT	58	E	108	F	117	F
113	Bellevue Ave & Pine St	Signal	SBR	62	E	110	F	116	F
113	Bellevue Ave & Pine St	Signal	NBR	41	D	44	D	44	D
113	Bellevue Ave & Pine St	Signal	NBT	46	D	46	D	46	D
113	Bellevue Ave & Pine St	Signal	NBL	70	E	73	E	53	D
113	Bellevue Ave & Pine St	Signal	EBT	15	B	38	D	36	D
113	Bellevue Ave & Pine St	Signal	EBL	28	C	52	D	51	D
113	Bellevue Ave & Pine St	Signal	EBR	15	B	32	C	27	C
114	Crawford Pl & Pine St	TWSC	Intersection	>150	F	>150	F	129	F
114	Crawford Pl & Pine St	TWSC	WBR	0	A	0	A	0	A
114	Crawford Pl & Pine St	TWSC	WBL	0	A	0	A	0	A
114	Crawford Pl & Pine St	TWSC	WBT	55	F	44	E	48	E
114	Crawford Pl & Pine St	TWSC	SBL	>150	F	54	F	45	E
114	Crawford Pl & Pine St	TWSC	SBT	0	A	0	A	0	A
114	Crawford Pl & Pine St	TWSC	SBR	>150	F	>150	F	>150	F
114	Crawford Pl & Pine St	TWSC	NBR	>150	F	>150	F	>150	F
114	Crawford Pl & Pine St	TWSC	NBT	0	A	0	A	0	A
114	Crawford Pl & Pine St	TWSC	NBL	>150	F	>150	F	>150	F
114	Crawford Pl & Pine St	TWSC	EBT	2	A	1	A	1	A
114	Crawford Pl & Pine St	TWSC	EBL	5	A	5	A	7	A
114	Crawford Pl & Pine St	TWSC	EBR	0	A	0	A	0	A
115	Summit Ave & Pine St	TWSC	Intersection	134	F	>150	F	>150	F
115	Summit Ave & Pine St	TWSC	WBR	62	F	62	F	60	F
115	Summit Ave & Pine St	TWSC	WBL	54	F	70	F	59	F
115	Summit Ave & Pine St	TWSC	WBT	82	F	82	F	87	F
115	Summit Ave & Pine St	TWSC	SBL	>150	F	>150	F	>150	F
115	Summit Ave & Pine St	TWSC	SBT	>150	F	>150	F	>150	F
115	Summit Ave & Pine St	TWSC	SBR	>150	F	>150	F	>150	F
115	Summit Ave & Pine St	TWSC	NBR	>150	F	>150	F	122	F
115	Summit Ave & Pine St	TWSC	NBT	>150	F	>150	F	>150	F
115	Summit Ave & Pine St	TWSC	NBL	>150	F	>150	F	>150	F
115	Summit Ave & Pine St	TWSC	EBT	3	A	2	A	3	A
115	Summit Ave & Pine St	TWSC	EBL	15	B	11	B	14	B
115	Summit Ave & Pine St	TWSC	EBR	3	A	2	A	2	A
116	Belmont Ave & Pine St	TWSC	Intersection	36	E	87	F	40	E
116	Belmont Ave & Pine St	TWSC	WBR	70	F	76	F	66	F
116	Belmont Ave & Pine St	TWSC	WBL	61	F	71	F	53	F
116	Belmont Ave & Pine St	TWSC	WBT	72	F	87	F	88	F
116	Belmont Ave & Pine St	TWSC	SBL	30	D	57	F	40	E
116	Belmont Ave & Pine St	TWSC	SBT	34	D	54	F	33	D
116	Belmont Ave & Pine St	TWSC	SBR	36	E	62	F	44	E
116	Belmont Ave & Pine St	TWSC	NBR	15	C	19	C	20	C
116	Belmont Ave & Pine St	TWSC	NBT	44	E	48	E	41	E
116	Belmont Ave & Pine St	TWSC	NBL	56	F	67	F	71	F

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

Intx No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
116	Belmont Ave & Pine St	TWSC	EBT	5	A	4	A	5	A
116	Belmont Ave & Pine St	TWSC	EBL	12	B	10	B	11	B
116	Belmont Ave & Pine St	TWSC	EBR	7	A	6	A	7	A
117	Boylston Ave & Pine St	TWSC	Intersection	39	E	>150	F	51	F
117	Boylston Ave & Pine St	TWSC	WBR	71	F	97	F	105	F
117	Boylston Ave & Pine St	TWSC	WBL	80	F	106	F	87	F
117	Boylston Ave & Pine St	TWSC	WBT	78	F	119	F	122	F
117	Boylston Ave & Pine St	TWSC	SBL	43	E	43	E	49	E
117	Boylston Ave & Pine St	TWSC	SBT	39	E	46	E	48	E
117	Boylston Ave & Pine St	TWSC	SBR	47	E	77	F	74	F
117	Boylston Ave & Pine St	TWSC	NBR	13	B	23	C	13	B
117	Boylston Ave & Pine St	TWSC	NBT	20	C	36	E	23	C
117	Boylston Ave & Pine St	TWSC	NBL	73	F	>150	F	78	F
117	Boylston Ave & Pine St	TWSC	EBT	6	A	5	A	5	A
117	Boylston Ave & Pine St	TWSC	EBL	13	B	13	B	10	B
117	Boylston Ave & Pine St	TWSC	EBR	8	A	7	A	8	A
118	Harvard Ave & Pine St	Signal	Intersection	30	C	57	E	50	D
118	Harvard Ave & Pine St	Signal	WBR	42	D	119	F	93	F
118	Harvard Ave & Pine St	Signal	WBL	62	E	108	F	109	F
118	Harvard Ave & Pine St	Signal	WBT	66	E	122	F	126	F
118	Harvard Ave & Pine St	Signal	SBL	62	E	93	F	66	E
118	Harvard Ave & Pine St	Signal	SBT	57	E	99	F	65	E
118	Harvard Ave & Pine St	Signal	SBR	76	E	142	F	99	F
118	Harvard Ave & Pine St	Signal	NBR	26	C	24	C	18	B
118	Harvard Ave & Pine St	Signal	NBT	32	C	32	C	31	C
118	Harvard Ave & Pine St	Signal	NBL	59	E	81	F	62	E
118	Harvard Ave & Pine St	Signal	EBT	8	A	7	A	8	A
118	Harvard Ave & Pine St	Signal	EBL	15	B	15	B	14	B
118	Harvard Ave & Pine St	Signal	EBR	9	A	11	B	11	B
119	Broadway & Pine St	Signal	Intersection	37	D	60	E	58	E
119	Broadway & Pine St	Signal	WBR	80	F	>150	F	>150	F
119	Broadway & Pine St	Signal	WBL	74	E	>150	F	>150	F
119	Broadway & Pine St	Signal	WBT	102	F	>150	F	>150	F
119	Broadway & Pine St	Signal	SBT	29	C	37	D	36	D
119	Broadway & Pine St	Signal	SBR	41	D	121	F	94	F
119	Broadway & Pine St	Signal	NBR	33	C	32	C	33	C
119	Broadway & Pine St	Signal	NBT	31	C	30	C	32	C
119	Broadway & Pine St	Signal	EBT	23	C	22	C	20	C
119	Broadway & Pine St	Signal	EBL	34	C	41	D	35	C
119	Broadway & Pine St	Signal	EBR	28	C	24	C	23	C
201	1st Ave & Pike St	Signal	Intersection	27	C	31	C	26	C
201	1st Ave & Pike St	Signal	SBR	25	C	25	C	25	C
201	1st Ave & Pike St	Signal	SBT	25	C	25	C	25	C
201	1st Ave & Pike St	Signal	NBT	12	B	14	B	12	B
201	1st Ave & Pike St	Signal	NBBL	22	C	24	C	22	C
201	1st Ave & Pike St	Signal	NBR	140	F	>150	F	127	F

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

Intx No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
202	2nd Ave & Pike St	Signal	Intersection	44	D	51	D	43	D
202	2nd Ave & Pike St	Signal	SBT	13	B	12	B	13	B
202	2nd Ave & Pike St	Signal	EBR	>150	F	>150	F	>150	F
202	2nd Ave & Pike St	Signal	EBT	>150	F	>150	F	>150	F
202	2nd Ave & Pike St	Signal	SBL	>150	F	>150	F	>150	F
203	3rd Ave & Pike St	Signal	Intersection	105	F	115	F	115	F
203	3rd Ave & Pike St	Signal	SBT	29	C	31	C	29	C
203	3rd Ave & Pike St	Signal	NBT	22	C	22	C	21	C
203	3rd Ave & Pike St	Signal	NBR	45	D	55	E	70	E
203	3rd Ave & Pike St	Signal	EBT	105	F	115	F	115	F
204	4th Ave & Pike St	Signal	Intersection	41	D	44	D	40	D
204	4th Ave & Pike St	Signal	NBT	19	B	19	B	19	B
204	4th Ave & Pike St	Signal	NBR	>150	F	>150	F	150	F
204	4th Ave & Pike St	Signal	EBT	91	F	100	F	94	F
205	5th Ave & Pike St	Signal	Intersection	52	D	49	D	38	D
205	5th Ave & Pike St	Signal	SBT	11	B	9	A	8	A
205	5th Ave & Pike St	Signal	EBR	33	C	35	C	32	C
205	5th Ave & Pike St	Signal	EBT	67	E	73	E	67	E
205	5th Ave & Pike St	Signal	SBL	>150	F	>150	F	96	F
206	6th Ave & Pike St	Signal	Intersection	75	E	83	F	68	E
206	6th Ave & Pike St	Signal	NBT	95	F	105	F	88	F
206	6th Ave & Pike St	Signal	NBR	73	E	55	E	42	D
206	6th Ave & Pike St	Signal	EBT	56	E	69	E	61	E
206	6th Ave & Pike St	Signal	EBR	73	E	100	F	77	E
207	7th Ave & Pike St	Signal	Intersection	69	E	68	E	64	E
207	7th Ave & Pike St	Signal	SBT	139	F	130	F	135	F
207	7th Ave & Pike St	Signal	EBR	32	C	28	C	25	C
207	7th Ave & Pike St	Signal	NBT	24	C	21	C	22	C
207	7th Ave & Pike St	Signal	NBR	36	D	41	D	36	D
207	7th Ave & Pike St	Signal	EBT	36	D	31	C	30	C
207	7th Ave & Pike St	Signal	SBL	>150	F	>150	F	>150	F
207	7th Ave & Pike St	Signal	EBL	55	D	48	D	44	D
208	8th Ave & Pike St	Signal	Intersection	35	D	33	C	30	C
208	8th Ave & Pike St	Signal	EBR	31	C	15	B	12	B
208	8th Ave & Pike St	Signal	NBT	72	E	77	E	71	E
208	8th Ave & Pike St	Signal	NBR	65	E	72	E	61	E
208	8th Ave & Pike St	Signal	EBT	19	B	13	B	11	B
208	8th Ave & Pike St	Signal	EBL	31	C	31	C	28	C
209	9th Ave & Pike St	Signal	Intersection	22	C	19	B	16	B
209	9th Ave & Pike St	Signal	EBT	27	C	42	D	18	B
209	9th Ave & Pike St	Signal	SBL	29	C	29	C	26	C

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

Intx No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
210	Terry Ave & Pike St	*	Intersection	27	C	28	D	21	C
210	Terry Ave & Pike St	*	EBR to Terry	30	C	11	B	7	A
210	Terry Ave & Pike St	*	WBL to Terry	29	C	N/A	N/A	N/A	N/A
210	Terry Ave & Pike St	*	Terry NBR	34	C	12	B	12	B
210	Terry Ave & Pike St	*	EBT	25	C	19	C	12	B
210	Terry Ave & Pike St	*	EBR to Hubbell	29	C	10	A	8	A
210	Terry Ave & Pike St	*	WBL to Hubbell	29	C	N/A	N/A	N/A	N/A
210	Terry Ave & Pike St	*	Hubbell NBR	34	C	88	F	77	F
211	Boren Ave & Pike St	Signal	Intersection	38	D	57	E	51	D
211	Boren Ave & Pike St	Signal	SBR	25	C	N/A	N/A	N/A	N/A
211	Boren Ave & Pike St	Signal	SBT	16	B	41	D	38	D
211	Boren Ave & Pike St	Signal	EBR	51	D	40	D	37	D
211	Boren Ave & Pike St	Signal	NBT	48	D	71	E	61	E
211	Boren Ave & Pike St	Signal	NBL	49	D	N/A	N/A	N/A	N/A
211	Boren Ave & Pike St	Signal	WBR	52	D	N/A	N/A	N/A	N/A
211	Boren Ave & Pike St	Signal	WBT	51	D	N/A	N/A	N/A	N/A
211	Boren Ave & Pike St	Signal	WBL	53	D	N/A	N/A	N/A	N/A
211	Boren Ave & Pike St	Signal	NBR	48	D	80	F	63	E
211	Boren Ave & Pike St	Signal	EBT	39	D	45	D	40	D
211	Boren Ave & Pike St	Signal	SBL	71	E	140	F	133	F
211	Boren Ave & Pike St	Signal	EBL	93	F	54	D	47	D
212	Melrose Ave & Pike St	Half-Signal	Intersection	21	C	52	D	39	D
212	Melrose Ave & Pike St	Signal	EBT	15	B	38	D	32	C
212	Melrose Ave & Pike St	Signal	EBR	9	A	26	C	16	B
212	Melrose Ave & Pike St	Signal	WBL	22	C	N/A	N/A	N/A	N/A
212	Melrose Ave & Pike St	Signal	WBT	21	C	N/A	N/A	N/A	N/A
212	Melrose Ave & Pike St	Signal	WBR	43	D	N/A	N/A	N/A	N/A
212	Melrose Ave & Pike St	TWSC	SBL	55	F	>150	F	121	F
212	Melrose Ave & Pike St	TWSC	SBT	59	F	>150	F	97	F
212	Melrose Ave & Pike St	TWSC	SBR	54	F	N/A	N/A	N/A	N/A
212	Melrose Ave & Pike St	TWSC	NBL	26	D	N/A	N/A	N/A	N/A
212	Melrose Ave & Pike St	TWSC	NBT	31	D	76	F	68	F
212	Melrose Ave & Pike St	TWSC	NBR	16	C	51	F	51	F
213	Bellevue Ave & Pike St	Signal	Intersection	23	C	37	D	35	C
213	Bellevue Ave & Pike St	Signal	WBR	25	C	45	D	34	C
213	Bellevue Ave & Pike St	Signal	WBL	17	B	41	D	41	D
213	Bellevue Ave & Pike St	Signal	WBT	25	C	N/A	N/A	N/A	N/A
213	Bellevue Ave & Pike St	Signal	SBL	40	D	47	D	42	D
213	Bellevue Ave & Pike St	Signal	SBT	39	D	42	D	38	D
213	Bellevue Ave & Pike St	Signal	SBR	45	D	N/A	N/A	N/A	N/A
213	Bellevue Ave & Pike St	Signal	NBR	38	D	65	E	44	D
213	Bellevue Ave & Pike St	Signal	NBT	29	C	56	E	41	D
213	Bellevue Ave & Pike St	Signal	NBL	35	C	N/A	N/A	N/A	N/A
213	Bellevue Ave & Pike St	Signal	EBT	3	A	11	B	10	B
213	Bellevue Ave & Pike St	Signal	EBL	45	D	58	E	61	E

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

Intx No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
213	Bellevue Ave & Pike St	Signal	EBR	4	A	17	B	11	B
214	Crawford Pl & Pike St	TWSC	Intersection	15	B	28	D	5	A
214	Crawford Pl & Pike St	TWSC	WBR	0	A	1	A	0	A
214	Crawford Pl & Pike St	TWSC	WBL	6	A	11	B	1	A
214	Crawford Pl & Pike St	TWSC	WBT	9	A	8	A	2	A
214	Crawford Pl & Pike St	TWSC	SBL	0	A	0	A	0	A
214	Crawford Pl & Pike St	TWSC	SBT	0	A	0	A	0	A
214	Crawford Pl & Pike St	TWSC	SBR	0	A	0	A	0	A
214	Crawford Pl & Pike St	TWSC	NBR	0	A	0	A	0	A
214	Crawford Pl & Pike St	TWSC	NBT	65	F	20	C	10	A
214	Crawford Pl & Pike St	TWSC	NBL	36	E	28	D	18	C
214	Crawford Pl & Pike St	TWSC	EBT	1	A	2	A	1	A
214	Crawford Pl & Pike St	TWSC	EBL	13	B	4	A	2	A
214	Crawford Pl & Pike St	TWSC	EBR	1	A	1	A	1	A
215	Summit Ave & Pike St	TWSC	Intersection	11	B	24	C	10	B
215	Summit Ave & Pike St	TWSC	WBR	6	A	5	A	7	A
215	Summit Ave & Pike St	TWSC	WBL	9	A	7	A	7	A
215	Summit Ave & Pike St	TWSC	WBT	4	A	2	A	2	A
215	Summit Ave & Pike St	TWSC	SBL	16	C	16	C	17	C
215	Summit Ave & Pike St	TWSC	SBT	18	C	18	C	20	C
215	Summit Ave & Pike St	TWSC	SBR	13	B	9	A	10	B
215	Summit Ave & Pike St	TWSC	NBR	13	B	14	B	11	B
215	Summit Ave & Pike St	TWSC	NBT	20	C	22	C	25	C
215	Summit Ave & Pike St	TWSC	NBL	24	C	24	C	12	B
215	Summit Ave & Pike St	TWSC	EBT	4	A	5	A	4	A
215	Summit Ave & Pike St	TWSC	EBL	10	A	9	A	9	A
215	Summit Ave & Pike St	TWSC	EBR	3	A	3	A	4	A
216	Belmont Ave & Pike St	TWSC	Intersection	11	B	24	C	10	B
216	Belmont Ave & Pike St	TWSC	WBR	3	A	3	A	3	A
216	Belmont Ave & Pike St	TWSC	WBL	8	A	7	A	6	A
216	Belmont Ave & Pike St	TWSC	WBT	1	A	1	A	1	A
216	Belmont Ave & Pike St	TWSC	SBL	19	C	17	C	19	C
216	Belmont Ave & Pike St	TWSC	SBT	25	D	24	C	27	D
216	Belmont Ave & Pike St	TWSC	SBR	14	B	10	A	9	A
216	Belmont Ave & Pike St	TWSC	NBR	17	C	15	C	19	C
216	Belmont Ave & Pike St	TWSC	NBT	25	D	23	C	26	D
216	Belmont Ave & Pike St	TWSC	NBL	16	C	16	C	19	C
216	Belmont Ave & Pike St	TWSC	EBT	3	A	3	A	2	A
216	Belmont Ave & Pike St	TWSC	EBL	8	A	6	A	6	A
216	Belmont Ave & Pike St	TWSC	EBR	7	A	6	A	5	A
217	Boylston Ave & Pike St	TWSC	Intersection	13	B	30	D	12	B
217	Boylston Ave & Pike St	TWSC	WBR	4	A	5	A	5	A
217	Boylston Ave & Pike St	TWSC	WBL	14	B	11	B	13	B
217	Boylston Ave & Pike St	TWSC	WBT	2	A	2	A	2	A
217	Boylston Ave & Pike St	TWSC	SBL	26	D	30	D	25	D
217	Boylston Ave & Pike St	TWSC	SBT	21	C	28	D	21	C

Figure 5 - Traffic Analysis Study Area VISSIM Level of Service Values for PM Peak Volumes

Intx No	Intersection	Control Type	Movement	Baseline		Alternative1		Alternative2	
				Delay	LOS	Delay	LOS	Delay	LOS
217	Boylston Ave & Pike St	TWSC	SBR	14	B	14	B	13	B
217	Boylston Ave & Pike St	TWSC	NBR	18	C	18	C	15	B
217	Boylston Ave & Pike St	TWSC	NBT	27	D	24	C	24	C
217	Boylston Ave & Pike St	TWSC	NBL	18	C	18	C	15	C
217	Boylston Ave & Pike St	TWSC	EBT	8	A	6	A	4	A
217	Boylston Ave & Pike St	TWSC	EBL	9	A	8	A	8	A
217	Boylston Ave & Pike St	TWSC	EBR	10	B	7	A	8	A
218	Harvard Ave & Pike St	Signal	Intersection	23	C	23	C	19	B
218	Harvard Ave & Pike St	Signal	WBR	13	B	12	B	11	B
218	Harvard Ave & Pike St	Signal	WBL	32	C	32	C	26	C
218	Harvard Ave & Pike St	Signal	WBT	10	B	8	A	8	A
218	Harvard Ave & Pike St	Signal	SBL	32	C	33	C	27	C
218	Harvard Ave & Pike St	Signal	SBT	18	B	27	C	15	B
218	Harvard Ave & Pike St	Signal	SBR	15	B	4	A	4	A
218	Harvard Ave & Pike St	Signal	NBR	43	D	44	D	32	C
218	Harvard Ave & Pike St	Signal	NBT	38	D	38	D	31	C
218	Harvard Ave & Pike St	Signal	NBL	48	D	43	D	41	D
218	Harvard Ave & Pike St	Signal	EBT	23	C	22	C	17	B
218	Harvard Ave & Pike St	Signal	EBL	26	C	26	C	22	C
218	Harvard Ave & Pike St	Signal	EBR	23	C	21	C	20	C
219	Broadway & Pike St	Signal	Intersection	39	D	38	D	37	D
219	Broadway & Pike St	Signal	WBR	32	C	20	B	19	B
219	Broadway & Pike St	Signal	WBL	46	D	47	D	39	D
219	Broadway & Pike St	Signal	WBT	36	D	31	C	29	C
219	Broadway & Pike St	Signal	SBL	51	D	51	D	51	D
219	Broadway & Pike St	Signal	SBT	28	C	29	C	30	C
219	Broadway & Pike St	Signal	SBR	26	C	24	C	24	C
219	Broadway & Pike St	Signal	NBR	41	D	39	D	41	D
219	Broadway & Pike St	Signal	NBT	44	D	43	D	45	D
219	Broadway & Pike St	Signal	NBL	62	E	58	E	60	E
219	Broadway & Pike St	Signal	EBT	35	D	35	C	33	C
219	Broadway & Pike St	Signal	EBL	48	D	50	D	43	D
219	Broadway & Pike St	Signal	EBR	34	C	34	C	32	C

*Signalized in Baseline and Two-Way Stop Controlled(TWSC) in Alternative 1 and Alternative 2.