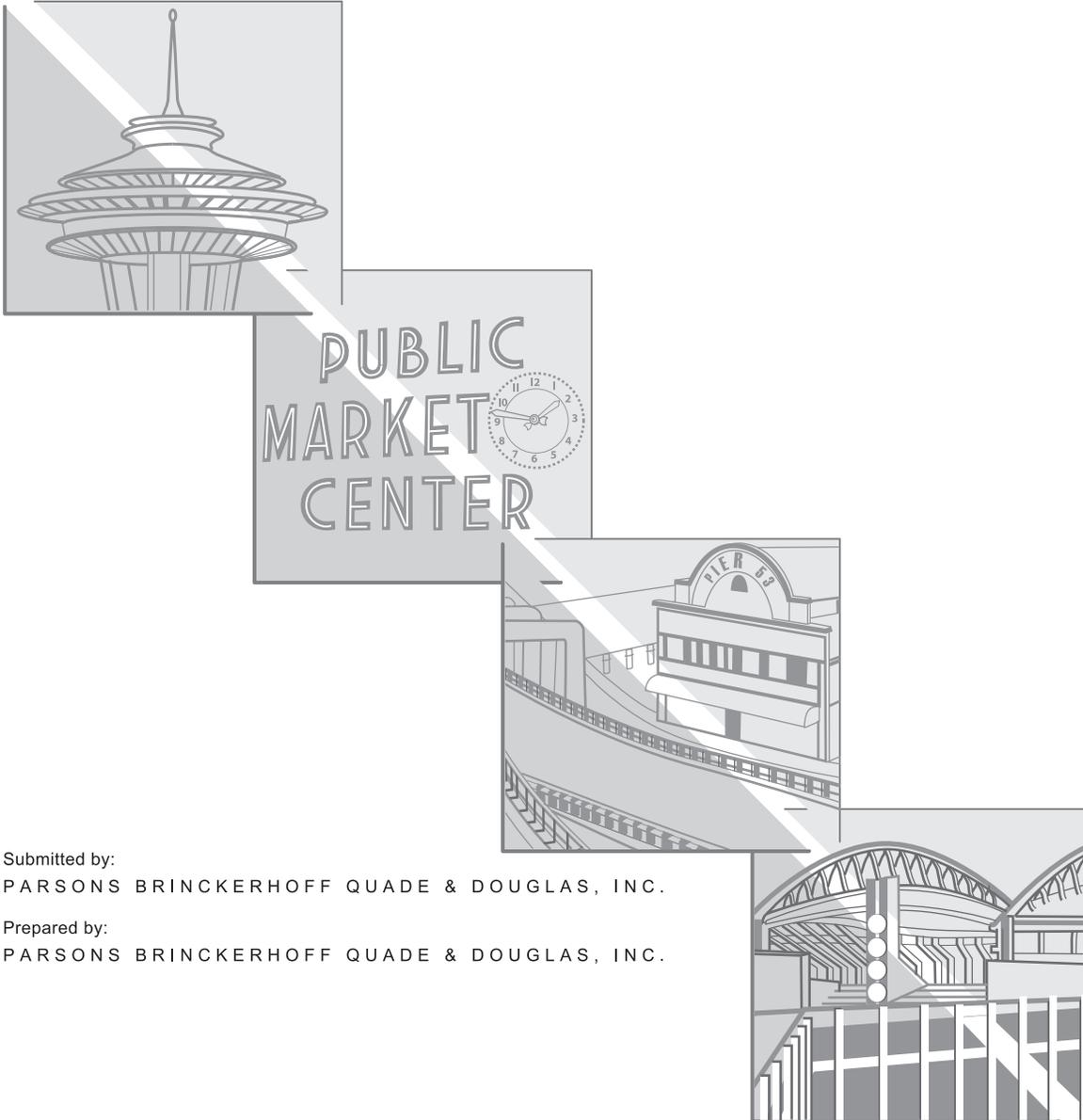


SR 99: ALASKAN WAY VIADUCT & SEAWALL REPLACEMENT PROJECT

Supplemental Draft Environmental Impact Statement

APPENDIX F

Noise and Vibration Discipline Report



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SR 99: ALASKAN WAY VIADUCT & SEAWALL REPLACEMENT PROJECT

Supplemental Draft EIS Noise and Vibration Discipline Report AGREEMENT No. Y-7888 FHWA-WA-EIS-04-01-DS

Submitted to:

Washington State Department of Transportation

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The SR 99: Alaskan Way Viaduct & Seawall Replacement Project is a joint effort between the Washington State Department of Transportation (WSDOT), the City of Seattle, and the Federal Highway Administration (FHWA). To conduct this project, WSDOT contracted with:

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ACRONYMS

dBa	A-weighted decibel
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
SR	State Route

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PREFACE

The technical appendices present the detailed analyses of existing conditions and predicted effects of each alternative. The results of these analyses are summarized and presented in the main text of the Supplemental Draft Environmental Impact Statement (EIS).

The Supplemental Draft EIS appendices are intended to add new information and updated analyses to those provided in the Draft EIS, published in March 2004. Information that has not changed since then is not repeated in these appendices. Therefore, to get a complete understanding of the project area conditions and projected effects, you may wish to refer to the appendices that were published with the Draft EIS. These are included on a CD in the Supplemental Draft EIS. To make it easier to understand where there is new information or analyses, the supplemental appendices present information in the same order as it was presented in the Draft EIS appendices.

The Supplemental Draft EIS and the technical appendices evaluate the effects of three construction plans: the shorter plan, the intermediate plan, and the longer plan. These plans vary in how long SR 99 would be completely closed, in how long the periodic closures may be, and in the total construction duration. For the purposes of the analyses in the technical appendices, two construction plans are evaluated with the Tunnel Alternative and one plan is evaluated with the Elevated Structure Alternative. However, each alternative could be built with any of the three plans. The construction durations and the sequencing would not be the same for a particular construction plan if paired with a different alternative; however, the effects would be within the ranges presented by the analyses.

There are several differences in how the information is presented between the main text of the Supplemental Draft EIS and how it is presented in these appendices. The Supplemental Draft EIS text refers to possible variations within the alternatives as “choices” while these appendices use the term “options.” (For example, Reconfigured Whatcom Railyard versus Relocated Whatcom Railyard is referred to as a design choice in the Supplemental Draft EIS and as an option in the appendices.) In either case, the intent is to describe the various configurations that could be selected and the effects for each design.

One design choice in particular is handled very differently between the Supplemental Draft EIS text and the technical appendices. For the Tunnel Alternative in the central waterfront area, there is a choice between a stacked tunnel alignment and a side-by-side tunnel alignment. In the appendices, to simplify the discussion, these two alignments, as well as the Elevated Structure Alternative, are each paired with a different set of options

throughout the corridor and presented as complete sets that are evaluated separately. The Supplemental Draft EIS text communicates this information differently by describing one Tunnel Alternative and one Elevated Structure Alternative and evaluating the effects of the different design choices (or mix-and-match components) separately. While it may appear that there are three alternatives analyzed in the appendices and two in the Supplemental Draft EIS text, there are in fact only two alternatives. Each alternative has many potential components or design choices that can be made throughout the corridor.

The organization of the analysis of the alternatives is also a little different between the main body of the Supplemental Draft EIS and the appendices. In the Supplemental Draft EIS text, we identify two alternatives: a Tunnel Alternative and an Elevated Structure Alternative. The Supplemental Draft EIS text compares these alternatives directly by comparing effects (for example, the effects of both alternatives on water quality are presented together). The appendices present the effects of each alternative separately (for example, all of the effects of the Tunnel Alternative are presented first, followed by all of the effects of the Elevated Structure Alternative). The substance of both discussions is the same. The organization of the Supplemental Draft EIS technical appendices mirrors that of the Draft EIS appendices, allowing you to more easily find comparable information in the Draft EIS appendices.

Chapter 1 SUMMARY

The Alaskan Way Viaduct and Seawall Replacement Project Draft Environmental Impact Statement (EIS) evaluated the construction and operational noise and vibration impacts of five Build Alternatives. This technical report evaluates noise impacts associated with changes to the alternatives and construction methods that were subsequently proposed. The updated project alternatives and options are described in detail in the 2006 Supplemental Draft EIS Appendix B, Alternatives Description and Construction Methods Technical Memorandum.

In December 2004, the lead agencies narrowed the five alternatives down to two—Tunnel and Rebuild. They identified the Tunnel Alternative as the Preferred Alternative and carried the Rebuild Alternative forward for analysis as well. Since that time, engineering and design has been updated and refined for the Tunnel and Rebuild Alternatives. Due to the magnitude of the changes in the design of the Rebuild Alternative, it has been renamed the Elevated Structure Alternative. The Elevated Structure Alternative combines elements of the Aerial and Rebuild Alternatives that were evaluated in the Draft EIS.

Environmental noise levels from both transportation and other sources are typical of an urban environment, and there is a high density of noise-sensitive receptors in the project area. The analysis of noise and vibration impacts in the project area compares predicted future noise levels with existing levels and applicable criteria. This report follows the methods and assumptions established in the 2004 Noise and Vibration Discipline Report included as Appendix F to the Draft EIS.

Both the Tunnel Alternative (the Preferred Alternative) and the Elevated Structure Alternative have been updated to include the Partially Lowered Aurora Option north of the Battery Street Tunnel to Aloha Street. The Tunnel Alternative also includes an option to lower Aurora farther north to Comstock Street (Lowered Aurora Option). In the extended area, four sites with noise-sensitive uses were identified and evaluated for traffic noise impacts.

A total of 52 sites, representing approximately 5,000 residential units and other noise-sensitive uses, were modeled using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM) to evaluate traffic noise impacts. Traffic noise levels at 44 of the 52 modeled sites currently approach or exceed the FHWA noise abatement criteria. The number of sensitive receptors that would be affected by noise under each updated alternative is summarized in Exhibit 1-1.

Exhibit 1-1. Summary of Noise and Vibration Impacts and Mitigation

Alternative	Construction Impacts	Operation Impacts	Mitigation Measures
Tunnel	During the construction period, noise would be bothersome to nearby residents and businesses.	Traffic noise levels were modeled in the year 2030 to approach or exceed the FHWA noise abatement criteria at 29 modeled sites representing approximately 4,298 residential units, 1,131 hotel rooms, and 120 shelter beds.	A construction noise control program would be implemented to reduce construction noise impacts. No mitigation measures are proposed at this time for operational noise.
Elevated Structure	During the construction period, noise would be bothersome to nearby residents and businesses.	Traffic noise levels were modeled in the year 2030 to approach or exceed the FHWA noise abatement criteria at 42 modeled sites representing approximately 4,532 residential units, 1,131 hotel rooms, and 120 shelter beds.	A construction noise control program would be implemented to reduce construction noise impacts. Sound absorptive materials may be used on the bottom of the upper deck of the rebuilt viaduct to reduce traffic noise levels along the central waterfront.

Chapter 2 METHODOLOGY

The methodology used in the assessment of impacts for noise and vibration was the same as that described in Chapter 3 of the 2004 Draft EIS Appendix F.

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Chapter 3 BACKGROUND, STUDIES, AND COORDINATION

Noise background and information sources for this report are the same as those described in Chapter 2 of the 2004 Draft EIS Appendix F.

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Chapter 4 AFFECTED ENVIRONMENT

Edit The affected environment discussed in this report is the same as described in Chapter 4 of the 2004 Draft EIS Appendix F with the exception of updated information on the following areas.

4.1 South – S. Spokane Street to S. Dearborn Street

The existing noise environment would be the same as for the 2004 Draft EIS Appendix F. No new noise receptors were identified in this area.

4.2 Central – S. Dearborn Street to Battery Street Tunnel

The existing noise environment would be the same as for the 2004 Draft EIS Appendix F. No new noise receptors were identified in this area.

4.3 North Waterfront – Pine Street to Broad Street

The existing noise environment would be the same as for the 2004 Draft EIS Appendix F. No new noise receptors were identified in this area.

4.4 North – Battery Street Tunnel to Comstock Street

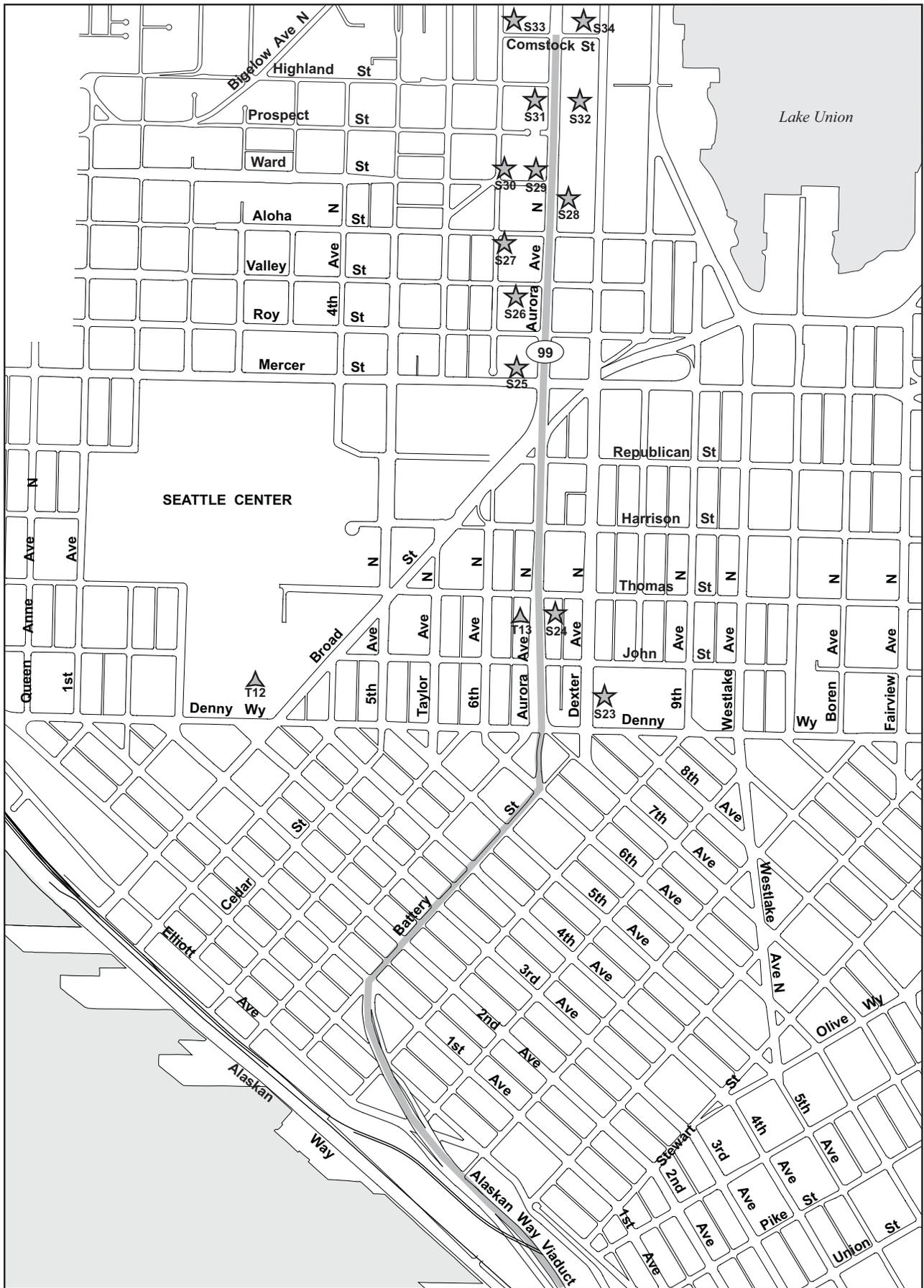
Noise measurements were taken at an additional four locations north of Prospect Street (Exhibit 4-1) to include receptors in the extended project area (Exhibit 4-2). The p.m. peak traffic volumes were entered into the Traffic Noise Model (TNM) to evaluate peak traffic noise under existing conditions.

Exhibit 4-1. Noise Measurements North of Prospect Street

	Location	Date	Time	Measured Sound Level (dBA)	Modeled Existing Peak Traffic Noise (dBA)
S31	Highland Condominiums	August 10, 2005	2:50 p.m.	70	69
S32	Dexter Apartments (Highland and Dexter)	August 9, 2005	2:45 p.m.	62	63
S33	Comstock and Sixth Avenue	August 10, 2005	3:15 p.m.	55	56
S34	Comstock and Dexter	August 9, 2005	3:15 p.m.	64	64

Note: The FHWA traffic noise abatement criterion is 67 dBA for residential land uses. Noise levels that approach or exceed the criterion are shown in **bold**.

The existing noise environment in the rest of the area would be the same as for the 2004 Draft EIS Appendix F.



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- S14 Short Term Measurement
- T2 Twenty-four Hour Measurement

**Exhibit 4-2
Noise Measurement Locations
North – Battery Street Tunnel
to Comstock Street**

Chapter 5 OPERATIONAL IMPACTS AND BENEFITS

Operational impacts and benefits of the updated Tunnel (Preferred) and Elevated Structure Alternatives are the same as described in Chapter 5 of the 2004 Draft EIS Appendix F with the exception of updated information on the following areas.

5.1 Tunnel Alternative (Preferred Alternative)

5.1.1 South – S. Spokane Street to S. Dearborn Street

Reconfigured Whatcom Railyard

Noise impacts in this area would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

Option: Relocated Whatcom Railyard

Noise impacts in this area would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

5.1.2 Central – S. Dearborn Street to Battery Street Tunnel

Stacked Tunnel, Under Elliott and Western with Steinbrueck Park Walkway

Noise impacts for the updated Tunnel Alternative's stacked tunnel alignment would be similar to those described for the Tunnel Alternative in the Draft EIS. The Draft EIS Tunnel Alternative included a side-by-side aerial structure connecting from Pike Street to the Battery Street Tunnel. The updated Tunnel Alternative would include the Steinbrueck Park Walkway above a side-by-side aerial structure. SR 99 would then travel under Elliott and Western Avenues to connect with the Battery Street Tunnel.

If SR 99 travels under Elliott and Western Avenues, a degree of noise shielding would be provided between approximately Lenora Street and the Battery Street Tunnel. Ground-level noise levels at receptors in this area (receptors T4, T5, and T6) were modeled to be 1 to 2 dBA quieter compared to existing conditions on Aurora Avenue N. Building the Steinbrueck Park Walkway would not change the noise levels at Steinbrueck Park compared to existing conditions (Exhibit 5-1).

The traffic noise impacts in the rest of this area would be similar to those described for the Tunnel Alternative in the Draft EIS.

Exhibit 5-1. Noise Levels for SR 99 Under Elliott and Western Avenues

Receptor	Noise-Sensitive Use	2002 Existing	2030 No Build	2030 Tunnel ¹
T4	64 residential units	72	73	70
T5	131 residential units	68	69	67
T6	617 residential units	73	74	72
S19/C10	Steinbrueck Park	79	79	79

Note: Values in **bold** approach or exceed the FHWA noise abatement criteria for traffic noise.

¹ 2030 Tunnel includes the stacked tunnel alignment with SR 99 passing under Elliott and Western Avenues

Option: Side-by-Side Tunnel

Noise impacts for the side-by-side tunnel alignment would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

Option: Over Elliott and Western Avenues with Steinbrueck Park Lid

SR 99 would travel over Elliott and Western Avenues in this option and would not provide any noise shielding at residential units between approximately Lenora Street and the Battery Street Tunnel. Ground-level noise levels at receptors in this area (receptors T4, T5, and T6) were modeled to be 1 dBA louder compared to existing conditions. The Steinbrueck Park Lid would cover SR 99 and decrease noise levels by 10 dBA at Steinbrueck Park compared to existing conditions (Exhibit 5-2).

Exhibit 5-2. Noise Levels for SR 99 Over Elliott and Western Avenues

Receptor	Noise-Sensitive Use	2002 Existing	2030 No Build	2030 Tunnel ¹
T4	64 residential units	72	73	73
T5	131 residential units	68	69	69
T6	617 residential units	73	74	74
S19/C10	Steinbrueck Park	79	79	69

Note: Values in **bold** approach or exceed the FHWA noise abatement criteria for traffic noise.

¹ 2030 Tunnel includes the side-by-side tunnel alignment with SR 99 crossing over Elliott and Western Avenues.

5.1.3 North Waterfront – Pine Street to Broad Street

Noise impacts in this area would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

5.1.4 North – Battery Street Tunnel to Comstock Street

Battery Street Tunnel without Widened Curves

Noise impacts in this area would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

Partially Lowered Aurora

The Tunnel Alternative includes lowering SR 99 below grade with retaining walls on either side to allow existing surface streets to pass over the highway. In the Draft EIS, the Aerial Alternative included a more extensive option to lower Aurora Avenue N./SR 99. In the Partially Lowered Aurora Option, which is part of the Tunnel Alternative's preferred alignment, Aurora Avenue N. would be lowered from the Battery Street Tunnel north portal to Republican Street, with roadway improvements and widening up to Aloha Street. The Partially Lowered Aurora Option would connect two city streets with bridges over Aurora Avenue N. at Thomas and Harrison Streets, and Aurora Avenue N. would cross over Mercer Street.

Loudest-hour traffic noise levels were re-modeled for all receptors north of the Battery Street Tunnel (Exhibit 5-3). Under the Tunnel Alternative with the Partially Lowered Aurora Option, loudest-hour traffic noise levels would range between 56 and 78 dBA at the modeled sites. Traffic noise levels were predicted to approach or exceed the noise abatement criteria at 5 of the 13 modeled sites in this area. The sites modeled to approach or exceed the noise abatement criteria represent approximately 205 residential units and 393 hotel rooms.

Exhibit 5-3. Modeled Peak Traffic $L_{eq}(h)$ Noise Levels for Partially Lowered Aurora

Receptor	Noise-Sensitive Use	2002 Existing	2030 No Build	2030 Tunnel
T13	159 hotel rooms	76	78	NA
S23	Park	59	60	60
S24	235 hotel rooms	75	76	68
S25	158 hotel rooms	73	74	74
S26	6 residential units*	70	71	NA
S27	77 residential units*	61	62	62
S28	78 residential units	75	76	76
S29	58 residential units	77	78	78
S30	41 residential units	59	61	61
S31	69 residential units	70	71	71
S32	155 residential units	62	62	62
S33	113 residential units	55	56	56
S34	72 residential units	64	65	65

Note: Values in **bold** approach or exceed the FHWA noise abatement criteria for traffic noise.

NA – Noise receptors would be removed from this location

*number of residential units updated since the Draft EIS.

Option: Battery Street Tunnel with Widened Curves

Noise impacts in this area would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

Option: Lowered Aurora

In the Draft EIS, a Lowered Aurora Option was included with the Aerial Alternative. The updated Lowered Aurora Option for the Supplemental Draft EIS includes lowering Aurora Avenue N. below grade with retaining walls on either side between the north end of the Battery Street Tunnel and Comstock Street. This would allow four surface streets, Thomas, Harrison, Roy, and Republican, to be reconnected over SR 99. An improved and widened Mercer Street would cross over SR 99 on a new bridge structure. Loudest-hour traffic noise levels for the Lowered Aurora Option would be similar to the Partially Lowered Aurora improvements (Exhibit 5-4).

Exhibit 5-4. Modeled Peak Traffic $L_{eq}(h)$ Noise Levels for Lowered Aurora

Receptor	Noise-Sensitive Use	2002 Existing	2030 No Build	2030 Tunnel
T13	159 hotel rooms	76	78	NA
S23	Park	59	60	60
S24	235 hotel rooms	75	76	68
S25	158 hotel rooms	73	74	72
S26	6 residential units*	70	71	NA
S27	77 residential units*	61	62	59
S28	78 residential units	75	76	76
S29	58 residential units	77	78	79
S30	41 residential units	59	61	60
S31	69 residential units	70	71	72
S32	155 residential units	62	62	58
S33	113 residential units	55	56	56
S34	72 residential units	64	65	65

Note: Values in **bold** approach or exceed the FHWA noise abatement criteria for traffic noise.

NA – Noise receptors would be removed from this location

*number of residential units updated since the Draft EIS.

5.1.5 Seawall – S. Washington Street to Broad Street

Noise impacts would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

5.1.6 Ventilation System Noise

Stacked Tunnel

The vent building locations with the stacked tunnel alignment would move slightly within the SR 99 right-of-way but would not be substantially different from those described in the Draft EIS Tunnel Alternative. Therefore, the analysis would be similar to that for the Draft EIS Tunnel Alternative. Ventilation systems under any alternative must meet the Seattle Noise Ordinance Objective Standards.

Option: Side-by-Side Tunnel

The vent building analysis for the side-by-side tunnel alignment would be the same as for the Draft EIS Tunnel Alternative.

Battery Street Tunnel without Widened Curves

A new vent building has been proposed for the Battery Street Tunnel, located near Fourth Avenue and Battery Street. The ventilation fans would be designed not to exceed either 60 dBA at the nearest commercial uses or 57 dBA at the property line of the nearest residential use during normal operations, whichever is the most restrictive. If the fans would normally be operated during nighttime hours (10 p.m. to 7 a.m. on weekdays and 10 p.m. to 9 a.m. on weekends), they would be designed not to exceed 47 dBA at the property line of the nearest residential use during nighttime hours.

Other improvements to the Battery Street Tunnel and their impacts would be similar to those described for the Tunnel Alternative in the Draft EIS.

Option: Battery Street Tunnel with Widened Curves

Ventilation system noise impacts with this option would be similar to those of the Battery Street Tunnel with fire/life safety improvements as described above.

5.1.7 Vibration Impacts

Vibration impacts would be similar to those described for the Tunnel Alternative in the 2004 Draft EIS Appendix F.

5.2 Elevated Structure Alternative

5.2.1 South – S. Spokane Street to S. Dearborn Street

Reconfigured Whatcom Railyard

Operational noise impacts in this area would be similar to those described in the 2004 Draft EIS Appendix F.

Option: Relocated Whatcom Railyard

Noise impacts in this area would be similar to those described in the 2004 Draft EIS Appendix F.

5.2.2 Central – S. Dearborn Street to Battery Street Tunnel

The single-level side-by-side aerial structure would begin to transition to a double-level configuration starting south of S. King Street and completing the transition about halfway between S. Jackson and S. Main Streets. The new double-level structure would be about 20 feet wider than the existing viaduct and similar in configuration to the Aerial Alternative considered in the Draft EIS. Noise levels for this section would be similar to those for the Aerial Alternative in the Draft EIS.

The Elliott/Western ramp configuration for the Elevated Structure Alternative would be similar to the existing Elliott/Western ramps, only rebuilt. Noise levels for this section would be similar to those for the No Build Alternative in the Draft EIS.

Noise impacts in the rest of the area would be similar to those for the Rebuild Alternative in the 2004 Draft EIS Appendix F.

5.2.3 North Waterfront – Pine Street to Broad Street

Noise impacts would be similar to those described for the Rebuild Alternative in the 2004 Draft EIS Appendix F.

5.2.4 North – Battery Street Tunnel to Comstock Street

Noise impacts for the Elevated Structure Alternative, which includes only the Partially Lowered Aurora Option, would be similar to those described for the Tunnel Alternative with the Battery Street Tunnel with Fire/Life Safety Improvements and Partially Lowered Aurora in Section 5.1.4 of this report.

5.2.5 Seawall – S. Washington Street to Broad Street

Noise impacts would be similar to those described for the Rebuild Alternative in the 2004 Draft EIS Appendix F.

5.2.6 Vibration Impacts

Vibration impacts would be similar to those described for the Rebuild Alternative in the 2004 Draft EIS Appendix F.

5.3 Project Benefits

Project benefits would be similar to those described in the 2004 Draft EIS Appendix F.

Chapter 6 CONSTRUCTION IMPACTS

Noise and vibration during construction of the updated Tunnel (Preferred) and Elevated Structure Alternatives would differ from the alternatives evaluated during the Draft EIS, largely because of the additional construction related to lowering Aurora Avenue N. north of the Battery Street Tunnel.

While most construction projects with nighttime work activities are completed under a temporary noise variance from the City of Seattle Department of Planning and Development, the long duration and unique nature of this project would likely require a technical or other appropriate variance.

Technical variances are granted when there are no practical means to work within the City noise ordinance. Obtaining a technical variance includes a public hearing process and requires the applicant to abide by noise mitigation measures set forth by the City.

The construction plans evaluated for noise and vibration are described in Chapters 3 and 4 of the 2006 Appendix B, Alternatives Description and Construction Methods Technical Memorandum. The construction activities evaluated in this study represent three possible construction sequences for the two alternatives: the shorter plan, the intermediate plan, and the longer plan. Two construction plans are evaluated with the Tunnel Alternative, and one plan is evaluated with the Elevated Structure Alternative. However, each alternative could be built with any of the three plans. The actual construction plans and activity sequencing could differ substantially from this evaluation; however, the locations and types of activities would be similar under the final sequence. Noise impacts would occur over a longer period with the longer construction scenarios. High-intensity noise events would correspond with the construction activities and would vary considerably throughout each construction stage. For example, demolition of the existing viaduct structures would have more noise impacts on surrounding uses than utility relocation activities.

6.1 Tunnel Alternative (Preferred Alternative)

The Partially Lowered Aurora Option north of the Battery Street Tunnel would result in noise and vibration levels typical of excavation and paving activities described in Chapter 6 of the 2004 Draft EIS Appendix F. Some construction activities would occur during nighttime hours, particularly activities that would require traffic lane closures.

Construction noise and vibration impacts for the updated Tunnel Alternative in the rest of the project area would be similar to those described for the Tunnel Alternative in Sections 6.1.4 and 6.2 of the 2004 Draft EIS Appendix F.

6.2 Elevated Structure Alternative

The Partially Lowered Aurora improvements that are included in the Elevated Structure Alternative would have the same construction noise and vibration impacts as for the updated Tunnel Alternative.

Construction noise and vibration impacts for the Elevated Structure Alternative in the rest of the project area would be similar to impacts of the Rebuild and Aerial Alternatives in Sections 6.1.2, 6.1.3, and 6.2 of the 2004 Draft EIS Appendix F.

Chapter 7 SECONDARY AND CUMULATIVE IMPACTS

Secondary and cumulative impacts would be similar to those described in Chapter 7 of the 2004 Draft EIS Appendix F.

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Chapter 8 MITIGATION

8.1 Operational Noise

8.1.1 Tunnel Alternative (Preferred Alternative)

Operational mitigation options for noise for the Tunnel Alternative (Preferred Alternative) and all Tunnel Alternative options are the same as those for the Tunnel Alternative included in Section 8.1 of the 2004 Draft EIS Appendix F, except for the Lowered Aurora Option that makes improvements north to Comstock Street.

Option: Lowered Aurora

It may be possible to reduce traffic noise levels under the updated Lowered Aurora Option at Receptors S28 and S29. Under this option, none of the streets between Roy and Comstock Streets would cross SR 99, and the right-turn-only intersections would be eliminated between Roy and Prospect Streets. Extending a noise wall on the eastern roadway shoulder from Aloha Street north to Prospect Street (approximately a 650-foot-long wall) would reduce ground-level noise at Receptor S28 by 9 dBA with an 8-foot-tall wall or 17 dBA with a 16-foot-tall wall. Extending a noise wall on the western roadway shoulder from 150 feet north of Aloha Street to Prospect Street (approximately a 500-foot-long wall) would reduce ground-level noise at Receptor S29 by 11 dBA with an 8-foot-tall wall or 15 dBA with a 16-foot-tall wall (Exhibit 8-1).

Exhibit 8-1. Evaluation of Noise Wall for Receptors S28 and S29

Modeled Receptor Location	Wall Height	Traffic Noise Leq(h) (dBA)	Traffic Noise Reduction (dBA)
S28	No Wall	79	0
	8 feet	70	9
	16 feet	62	17
S29	No Wall	76	0
	8 feet	65	11
	16 feet	61	15

8.1.2 Elevated Structure Alternative

Operational mitigation options for noise for the Elevated Structure Alternative are the same as those for the Rebuild Alternative included in Section 8.1 of the 2004 Draft EIS Appendix F.

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Chapter 9 CONSTRUCTION MITIGATION

Construction noise and vibration mitigation measures would be similar to those described in Sections 8.2 and 8.3 of the 2004 Draft EIS Appendix F.

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Chapter 10 REFERENCES

References are the same as those in Chapter 9 of the 2004 Draft EIS Appendix F.