

CITY OF SEATTLE ANALYSIS AND DECISION OF THE DIRECTOR OF THE  
DEPARTMENT OF CONSTRUCTION AND INSPECTIONS  
Major Public Project Construction Noise Variance

Application: Request for a Major Public Project Construction Noise Variance ("Noise Variance" or "MPPCNP") from the maximum permissible sound level requirements of the Noise Control Code, Seattle Municipal Code ("SMC") Chapter 25.08, during construction of the State Route 520 Bridge Replacement and HOV program. This Noise Variance application pertains only to construction activities that must take place during nighttime hours as those hours are defined in Chapter 25.08 SMC.

Project No.: 6733975-NV

Site Address: State Route 520 and Interstate 5 Express Lanes

Applicant: Washington State Department of Transportation ("WSDOT")

I. Introduction

WSDOT has requested a Noise Variance for the ongoing SR 520 Replacement Project, SR 520/I-5 Express Lanes Connection Project (the "Project").

WSDOT requests allowing construction noise generated on the site to exceed the noise level limits set by SMC 25.08.410 during nighttime hours between 10:00 p.m. and 7:00 a.m. on weekdays, and between 10:00 p.m. and 9:00 a.m. on weekends and legal holidays. The variance is requested for a period of 3 years, the length of time needed to complete substantial construction of the Project. A map of the Project areas is shown in Exhibit 1 below.

The main elements of the project include:

- A new, reversible transit/HOV ramp between SR 520 and the I-5 express lanes;
- Restriped I-5 express lanes that retain the four existing lanes while adding a reversible transit/HOV lane between the I-5 / SR 520 interchange and Mercer Street;
- A modified, reversible ramp between the I-5 express lanes and Mercer Street; and
- New Bridge abutments across SR 520 at 10th Ave E. and Delmar Ave E.

II. Findings

1. The Proposed Project of the SR 520 Bridge Replacement and HOV Program is a "major public project" as defined in SMC 25.08.168 and is a "public facility" as defined in SMC 23.84.030. SR 520 plays a major role in sustaining the region's economy and maintaining the ability to travel between Seattle and the Eastside.

2. The proposed SR 520/I-5 Project major construction is set to begin in Spring/Summer 2020 and is estimated to be completed in 2023.
3. On June 23, 2019 WSDOT applied for this Noise Variance. The Noise Variance was requested as provided for in SMC 25.08.590 and 25.08.655 to allow on-site construction noise to exceed the maximum permissible sound level during nighttime hours as provided for in SMC 25.08.410 through 25.08.425. WSDOT supplemented the application with a letter by Denise Cieri dated September 18, 2019, a letter by Dawn Yankauskas with an attached table dated September 26, 2019, a letter by Dawn Yankauskas with attached exhibit and a copy of the Final Environmental Impact Statement (FEIS) Reevaluation received on October 23, 2019. These documents are the complete MPPCNV application and can be found at <https://cosaccela.seattle.gov/portal/welcome.aspx>.
4. The proposed 3-year SR 520/I-5 Project consists of five major construction phases. These are the phases and their estimated durations:
  - i. Reversible transit/HOV ramp structure between SR 520 and the I-5 Express Lanes. (spring/summer 2020 through winter/spring 2022);
  - ii. Retaining wall along westbound SR 520 to northbound I-5 (spring/summer 2020 through winter/spring 2022);
  - iii. Mercer Street ramp configuration (fall/winter 2020 through spring/summer 2021);
  - iv. I-5 Express Lanes stormwater retrofit and lane reconfiguration (spring 2021 through spring 2022); and
  - v. Final lighting, signing and striping (spring 2022 to fall 2022).
5. SDCI retained BRC Acoustics and Audiovisual Design (BRC) to assist in reviewing and analyzing the Noise Variance application and WSDOT's response letters. BRC reviewed all documents supplied by WSDOT and provided comments and recommendations to SDCI.
6. SDCI reviewed the Final Environmental Impact Statement (FEIS) Reevaluation and found that no additional mitigations are required beyond what was included in the Noise Management and Mitigation Plan (NMMP) dated June 23, 2019.
7. If all construction activities were only allowed during regular working hours established by SMC 25.08.425, the overall construction period would be extended and the economic costs to taxpayers would increase significantly. The costs are estimated to be \$2.6 to \$9.4 million in direct project costs, and between \$90 to \$280 million of indirect economic costs.
8. Limiting SR 520/I-5 Project construction to daytime hours would be unreasonable in light of public and worker safety and would render the project economically and functionally unreasonable. Many work activities for this project cannot be completed over or adjacent to active traffic because they are too risky or dangerous to perform adjacent to or over traffic. Some activities require construction work zones to be closed off from traffic. Work zones requiring closure to live traffic will need either closures of all lanes, directional closures, or single lane closures of SR 520, I-5 and ramps during work hours to safely complete the work. Daytime freeway and ramp closures would have substantial effects on the traveling public,

including either several months of all-day ramp and freeway lane closures or nearly a year of off-peak ramp and freeway lane closures to the connection between SR 520 and I-5 and the resulting detour traffic on other state and local facilities.

9. The SR 520/I-5 Project noise variance application proposes a 6 dBA increase over existing hourly average noise levels (Leq) measured during the quietest part of the nighttime hours (the five-hour period from 12:00 a.m. to 5:00 a.m.) at 5 monitoring sites. The noise variance application also proposes a highest 1% maximum noise level (L1) limit above the nighttime Leq to monitor potential short-term noises. The measured L1 is the sound level exceeded for 1% of the measurement duration. The proposed L1 indicator levels are 10 dBA above the proposed Leq noise level limits. The requested limits are summarized in Table 1 (see below).

TABLE 1 Variance Noise Limits proposed by WSDOT

Measured Site	Representative Residential Receivers-Additional Modeled Only Sites	Measured 12 to SAM Log Hourly Average Leq (dBA)	<b>Proposed</b> Nighttime Noise Level Hourly Average Limit Leq (dBA)	<b>Proposed</b> Nighttime Noise Level Hourly Average Limit L1 (dBA)
M1	AI to A3	66	72	82
M2	A4 to A15	68	74	84
M3	*Not Applicable	81*	Not Applicable	Not Applicable
M4	A17 to A18	64	70	80
M5	A19 to A21	65	71	81
M6	A22	60	66	76

\*M3 is located directly over the I-5 lanes and will be used for L1 monitoring purposes only. It is not representative of what residents in the area would hear and is not proposed to be used for nighttime noise level hourly Leq limits.

10. The baseline monitoring location M3 was located directly over the I-5 lanes and does not represent residential setbacks found in the I-5 project corridor. For this reason, SDCI is removing this location as a baseline and compliance monitoring point.

### III. Noise Variance Standards

The following analysis applies the Noise Code standards (shown in italics) to the application.  
25.08.590-Granting of variance

- A. *No variance shall be granted until the Administrator has considered the relative interests of the applicant, other owners or possessors of property likely to be affected by the noise, and the genera/public.*

The Applicant's interests include public and worker safety, minimizing project cost overruns, and limiting the overall duration of this phase of the SR 520 Replacement and HOV program.

The owners or possessors of properties interests include maintaining their normal sleep and repose by limiting night work, minimizing construction related impacts, and limiting the overall duration of the project.

The general public's interests include minimizing project cost overruns, reducing construction and traffic impacts, and expediting the project completion.

*B. A technical, economic, or major public project construction variance may be granted only after notice and an opportunity for public comment. For technical or economic variances proposed for more than two weeks and for major public project construction variances, a public meeting is also required, in accordance with rules adopted by the Administrator.*

SDCI held a public meeting on August 1, 2019, to take public comments on the Noise Variance application. As required by SDCI Director's Rule 3-2009, Section D.2, notice was published in SDCI's Land Use Information Bulletin and the Seattle Times on July 5, 2019. Notice of the application and public meeting was mailed to residents within 350 feet of the Project boundary.

*C. The Administrator may grant a variance if the Administrator finds that:*

*1. The noise occurring or proposed to occur does not endanger public health or safety; and*

*2. The applicant demonstrates that the criteria required for the variance are met.*

Pages 10 through 12 of the application, supplemented by the September 18 and 26, 2019 WSDOT submittals demonstrate the criteria for a variance are met.

*D. Noise Management and Mitigation Plan. As part of the application for a variance, an applicant shall submit a Noise Management and Mitigation Plan to be approved by the Administrator. A Noise Management and Mitigation Plan shall contain the following components, except that the Administrator may modify the required components for a temporary noise variance as the Administrator determines appropriate to fit the circumstances surrounding the requested temporary variance:*

*1. A description of the exterior sound level limits of Chapter 25.08 expected to be exceeded, estimates of the amount(s) by which these levels are expected to be exceeded and by what equipment, the exterior sound level limits that will be in effect during the variance, the time periods during which the pre-variance exterior sound level limits may be exceeded, and the expected sources of the sound during each of the time periods (e.g., types of equipment or activity causing the exterior sound level limits to be exceeded);*

WSDOT provided in its application a detailed description of the exterior sound limits of SMC Chapter 25.08 that are expected to be exceeded during the different construction activities outlined in the application.

*2. Measures and provisions to be taken to avoid exceeding the exterior sound level limits of this Chapter 25.08;*

WSDOT provided a list of specific noise mitigation measures that the contractor will use in performing the work. The contractor who performs the work will be obligated to employ these mitigation measures as a part of its work plan. If needed, the contractor will update the Noise Management and Mitigation Plan) NMMP to provide more precise information regarding how and when these mitigation measures will be used. The updated NMMP would be reviewed and approved by SDCI before nighttime work commences.

*3. Provisions to mitigate sounds that exceed the exterior sound level limits and that cannot otherwise be avoided.*

WSDOT provided a list of specific noise mitigation measures that the contractor will use in performing the work. The list contains standard industry practices that the contractor will be required to provide in the manner set out in the NMMP.

*4. A process for informing the public in the affected areas about the provisions of the variance.*

SDCI will notify the surrounding community of this variance decision as required by Director's Rule 3-2009. The Decision will also be posted in the Seattle Times and SDCI's Land Use Information Bulletin.

WSDOT has several different methods of communication to keep community members informed of project construction. These include: maintaining construction and project web pages; providing regular construction email updates; mailing construction notifications in advance of work; hosting public information meetings; and providing community members the opportunity to contact an ombudsman.

The SR 520 Ombudsman serves as a liaison for community members and WSDOT. Within WSDOT, this new role is unique to the SR 520 Program. The role includes investigating issues community members raise and identifying possible solutions. Community members could include nearby residents, transportation system users, community organizations, elected representatives, or other stakeholders. In addition, the Ombudsman plays a proactive role by attending planning and construction meetings to monitor and raise issues related to community impacts as decisions are being made. With respect to noise complaints, the Ombudsman is not WSDOT's first line of communication with the community and SDCI. That is the responsibility of the project communications team and the Independent Noise Monitor (INM).

The Director, through Rule 3-2009, requires WSDOT to provide an INM whose responsibility is to oversee the monitoring of sound levels from construction covered by the Noise Variance and to report directly to the SDCI Coordinator. If the monitoring equipment detects an exceedance of the MPPCNV nighttime noise level limits or indicator levels, or if a caller to the hotline has a noise-related complaint and requests additional information, the INM

will be notified. The INM will be on-site during all periods of scheduled night work. If the INM receives a complaint call during nighttime work hours, the INM will notify the contractor and other WSDOT inspection staff on the job, perform a site inspection within 60 minutes of receiving the complaint, conduct short-term noise measurements (minimum 15 minutes per location) while on-site to confirm whether an exceedance of the MPPCNV sound-level limits is occurring, and investigate potential work modifications to resolve the complaint. INM's regular duties include, but are not limited to:

- Coordinating with WSDOT and contractor's nighttime crews about planned work operations;
- Coordinating with WSDOT Communications Team and Ombudsman on any updates or concerns from neighborhood and residents;
- Coordinating with SDCI on any questions or concerns from the City regarding project noise;
- Conducting nightly verification of fixed noise monitoring stations with handheld noise monitor to validate noise monitoring results from the fixed locations;
- Conducting regular spot-check noise monitoring at various locations of the project site with hand-held monitor; and
- Addressing noise exceedances and monitoring alarms in the field.

The Noise Monitoring Plan will also include a provision to generate weekly and annual reports that are required as part of Director's Rule 3-2009. The INM will provide the reports to SDCI and will include any monitored Leq or L1 exceedances, noise complaints logged in the program database, and work modifications completed to resolve complaints. The weekly reports will be publicly available.

*E. The Administrator may impose conditions, including but not limited to conditions relating to types of equipment, hours of use, and duration, to mitigate the adverse impacts of granting the variance. The Administrator may also include conditions proposed by the applicant as part of the variance application. Compliance with the Noise Management and Mitigation Plan approved by the Administrator is a condition of every variance.*

This Decision imposes conditions to mitigate impacts of granting the variance. The conditions are listed at the end of the Decision.

### **25.08.655- Major public construction variance**

*A. The Administrator may grant a major public project construction variance to provide relief from the exterior sound level limits established by this Chapter 25.08 during the construction periods of major public projects. A major public project construction variance shall provide relief from the exterior sound level limits during the construction or reconstruction of a major public project only to the extent the applicant demonstrates that compliance with the limits would:*

- 1. Be unreasonable in light of public or worker safety or cause the applicant to violate other applicable regulations, including but not limited to regulations that reduce impacts on transportation infrastructure or natural resources; or*

2. *Render the project economically or functionally unreasonable due to factors such as the financial cost of compliance or the impact of complying for the duration of the construction or reconstruction of the major public project.*

WSDOT provided the following reasons why the Noise Variance should be approved pursuant to both Criteria.

Criterion 1: Unreasonable in light of public and worker safety.

Limiting SR 520/I-5 Project construction to daytime hours would be unreasonable in light of public and worker safety and would render the project economically and functionally unreasonable. Many work activities for this project cannot be completed over or adjacent to active traffic because they are too risky or dangerous to perform adjacent to or over traffic. Some activities require construction work zones to be closed off from traffic. Work zones requiring closure to live traffic will need either closures of all lanes, directional closures, or single lane closures of SR 520, I-5 and ramps during work hours to safely complete the work. Daytime freeway and ramp closures would have substantial effects on the traveling public, including either several months of all-day ramp and freeway lane closures or nearly a year of off-peak ramp and freeway lane closures to the connection between SR 520 and I-5 and the resulting detour traffic on other state and local facilities.

Criterion 2: Economically unreasonable

WSDOT evaluated the economic effects of requiring all construction activities of the SR 520/I-5 Project that would otherwise exceed nighttime property-line noise limits to occur during daytime hours. This restriction would affect the schedule and cost of constructing the project and have a substantial economic impact on the traveling public because of the significance of SR 520 and I-5 on the regional transportation network and local economy. To illustrate, completing demolition in the vicinity of 10th Avenue E, Delmar Drive E, and Roanoke Street could require between 75-100 daytime shifts with non-peak freeway lane and ramp closures, compared to fewer than 25 shifts if completed at night. Demolishing existing retaining wall at the westbound SR 520 to northbound I-5 ramp could require between 225-300 daytime shifts with non-peak freeway lane and ramp closures, compared to fewer than 72 shifts if completed at night.

Overall, limiting construction to daytime hours would result in an estimated one-year delay to project completion. WSDOT's analysis estimated the increased direct contract cost, as a result of limiting construction to daytime only, to WSDOT and Washington taxpayers between \$2.6 and \$9.4 million. This estimated increase in direct project costs accounts for the anticipated one-year delay of construction that would result from restricting construction to daytime hours.

In total, the economic cost to the region of completing all project work during daytime hours only is estimated to be between \$90 and \$280 million dollars, depending on the actual required periods of facility closures, assuming the Liquidated Damages ("LD") values used. (Liquidated damages are defined as a means of compensation for the breach of a contract.) The actual

economic cost to the region of completing all project work during daytime hours is likely to be greater.

*B. A major public project construction variance shall set forth the period or periods during which the variance is effective, which period or periods shall be the minimum reasonably necessary in light of the standard set forth in subsection 25.08.655.A, and the exterior sound level limits that will be in effect during the period of the variance. Different major public project construction variances may be issued for distinct phases of a construction project, or one major public project construction variance may be issued for the entire major public project. The period or periods during which a major public project construction variance is effective may be stated in terms of calendar dates or in terms of the duration of a construction project or a phase or phases of a construction project.*

This Decision grants a 3-year variance starting at the beginning of nighttime construction. The applicant plans for their Project to take 3 years to complete. This is the minimum reasonably necessary to complete the Project.

*C. The Administrator shall condition a major public project construction variance as necessary to provide reasonable control or mitigation of the construction noise that may be expected to occur pursuant to the variance.*

This Decision imposes conditions that are necessary to provide reasonable control and to mitigate construction noise impacts.

### **Director's Rule 3-2009**

#### Section E: Application Review Standards

- 1. Noise Abatement Coordinators, on behalf of the Administrator, will review the information provided that justifies the need for a variance and consider at a minimum:*
  - a. Whether the applicant's information and analysis are accurate and complete (i.e., does it contain all of the elements required by the code);*

The information submitted by WSDOT has been reviewed by SDCI and BRC and has been determined to be accurate and complete.

- b. The physical characteristics of the sound proposed to be emitted pursuant to the variance;*

The application proposes construction to occur from Spring/Summer 2020 to Spring/Summer 2023, for the requested 3-year duration. The Projects expected nighttime construction activities that require a noise variance are part of some or all of the phases described in the application. The contractor will update the list of equipment and the order and timing of activities in the



updated NMMP as necessary and discussed in the section titled "Noise Management and Mitigation Plan" of this report. All construction activities noted are not expected to occur continuously on all nights for consecutive weeks and it is likely that there will be breaks in the activities.

WSDOT proposes to include the following construction activities and equipment in the nighttime construction:

- Excavation, embankment and paving (dozer, excavator, trucks, grader, vibratory rollers, asphalt roller, drill rig);
- Install sheet piles/shoring (vibratory hammer, crawler crane, welder, diesel generator);
- Concrete sawing and concrete breaking (excavator with crusher, excavators with impact hammer, compressors, dump trucks, loader, debris trucks, excavators with thumb);
- Non-impact casing installation, either oscillator or vibrated casing and excavation of soil (crawler crane, welder, drill rig, vibratory hammer, concrete trucks, concrete pumps, trucks);
- Place forms, rebar and concrete (hydraulic crane, crawler crane, concrete pump, compressors, trucks, concrete trucks); and
- Paving, signing, and striping (roller, concrete truck, delivery truck, dump truck, loader, street sweeper, sign and stripe trucks).

A staging area on WSDOT-owned property under I-5 near the Ship Canal Bridge for staging equipment and materials for the project. At this staging area all equipment and activities will comply with the noise limits contained in Table 2 of this decision.

*c. The proposed times and proposed duration of the sound to be emitted;*

The Noise Code makes allowances for construction on public projects to produce sound levels that are 25 dBA higher than for other noise sources from 7:00a.m. to 10:00 p.m. weekdays and 9:00 a.m. to 10:00 p.m. weekends and legal holidays. The allowed hourly average sound levels are Leq of 80 dBA at residential receivers. WSDOT requested relief from these standard working hours.

SMC 25.08.425 regulates impact noise working hours to 8:00a.m. to 5:00p.m. weekdays and 9:00a.m. to 5:00p.m. on weekends and legal holidays. WSDOT's application requests relief from this standard and asks for the ability to conduct periodic impact work overnight from 5:00 p.m. to 8:00 a.m. at limited locations.

*d. The topography and population density of the area in which the sound is proposed to be emitted;*

In regards, to the population affected by this project, WSDOT provided a 2010 Population Density map published by the U.S. Census Bureau. This map includes an overlay of the project's proposed work area for reference.

The application included 3-dimensional modeling of the construction areas, which incorporates elevations of noise sources, receivers, topography, and structural interactions with the

intervening sound path. For example, Exhibit 13 of the application reflects the excavation and demolition work anticipated to occur early in the project. In the SR 520 and I-5 interchange area, the work would occur below the elevation of nearby residences and would be partially shielded by the terrain and buildings, reducing construction noise experienced as distance increases from the construction activities. Modeling results included in the same exhibit illustrate the benefit of the existing noise wall and lower elevation of residences located west of I-5, and the shielding provided by the retaining wall east of I-5.

As illustrated and tabulated in Exhibits 12 through 22 of WSDOT's application, the distance at which construction noise levels would decrease to below the requested nighttime limits of between 66 and 74 dBA Leq would not extend beyond 1,000 feet from construction in any direction, and in most locations, including the benefits of proposed mitigations, would not extend beyond the edge of WSDOT's right of way.

*e. Whether the public health and safety is endangered;*

As part of the September 26th, 2019 WSDOT letter, WSDOT provided an extensive review of the current medical literature as regards health effects of exposure to long-term environmental noise. Relevant citations were provided from agencies including the IOM, OSHA, EPA, WHO, and publications including *The Lancet* and *Environmental Health Perspectives*. Studies addressed effects on hearing loss, sleep disturbance, and cardiovascular disease.

The sound levels proposed as part of this Variance application do not approach the range and duration associated with hearing loss.

The literature on cardiovascular effects of noise applies to long-term exposure to highway, rail, or aircraft noise and is not applicable to the short-term exposure to construction noise at any given residence as a result of this construction-noise Variance.

Occasional annoyance and short-term interference with sleep may result as construction activities pass the vicinity of any given residence. The noise-mitigation measures proposed by WSDOT and conditions imposed as part of this MPPCNV are expected to minimize these effects.

For this project, construction would occur intermittently in different locations over a 3-year period, and the equipment, activities, and resultant sound levels would vary markedly over that period. Further, residents in the area would not be exposed to elevated sound levels for more than brief periods since they would mostly be inside buildings where it would be substantially quieter, approximately 15 to 30 dBA quieter depending on the specific building and whether the windows are open or closed. Therefore, prolonged exposure to elevated levels would not occur and no long-term health effects would be expected from the proposed construction activities due to overall levels or to the timing and duration of the activities.

*f. Relative interests of the applicant, other owners or possessors of property likely to be affected by the noise, and the general public;*

The Applicant's interests include public and worker safety, minimizing project cost overruns, and limiting the overall duration of this phase of the SR 520 Replacement and HOV program.

The owners or possessors of properties interests include maintaining their normal sleep and repose by limiting night work, minimizing construction related impacts, and limiting the overall duration of the project.

The general public's interests include minimizing project cost overruns, reducing construction and traffic impacts, and expediting the project completion.

*g. Whether proposed noise mitigation approaches are likely to be effective;*

WSDOT's Proposed Noise Mitigation Measures include mitigation that shall be implemented during the proposed nighttime construction activities.

WSDOT's application includes a NMMP as required by SMC 25.08.590.D. If changes are necessary, the selected project contractor is required to provide more specifics to the NMMP. They are responsible for meeting the noise levels established by the Noise Variance and must use the mitigation measures listed in the plan. The NMMP includes:

- A description of the type of construction activities and equipment that will generate noise during nighttime hours;
- A description of the expected exterior sound levels at each of the receiving sites, comparing those levels to the nighttime hourly LEQ requested through the Noise Variance process;
- Specifications for noise control at the construction sites requiring WSDOT's contractor to implement measures for compliance with nighttime noise limits requested in the Noise Variance application; and
- WSDOT proposes the following "required minimum mitigation measures":
  - The contractor will use broadband or strobe backup warning devices or use backup observers in lieu of backup warning devices for all equipment, in compliance with Washington Administration Code, Sections 296-155-610 and 296-155-615; and
  - Except as described below, WSDOT proposes to conduct no impact work, such as auger shaking, jack hammering and impact pile driving, during nighttime hours from 10 p.m. to 7 a.m. on weekdays and 10 p.m. to 9 a.m. on weekends and legal holidays. WSDOT proposes to conduct nighttime impact work within the noise level limits established in the variance. This proposal is addressed in Condition 10 and 11, Section VI of this Decision.
  - WSDOT proposes to include impact work for creating access and workspace. These activities are requested for up to 25 non-consecutive nights at the 10th Avenue Abutment, 5 non-consecutive nights at the Mercer Ramp and 15 non-consecutive nights in the I-5 Express lanes. This work was modeled and shown in Exhibit 12 of the application.

- WSDOT proposes to include impact work for demolishing the existing retaining wall at the westbound SR 520 northbound I-5 on ramps. The requested duration for this work is 72 nonconsecutive nights. This work was modeled and shown in Exhibit 15 of the application. No design or work sequence is available to safely keep adjacent freeway and ramp lanes open to traffic while demolition is occurring.
- Additional notifications would be sent to residences within 300 feet of any nighttime impact work. Notices would be sent with a minimum of 3 days before the start of nighttime impact work.

Other proposed minimum mitigation measures include the following:

- The contractor will securely fasten truck tailgates;
- The contractor will use sand, rubber or plastic lined truck beds for all haul trucks to reduce noise, unless an exception is approved by WSDOT;
- The contractor will not use compression brakes;
- The contractor will not leave equipment to idle for longer than five minutes; and
- The contractor will use temporary noise mitigation shields, enclose, or use low noise-generating stationary equipment, such as light plants, generators, pumps, and air compressors near residences where practical.

The NMMP also includes specifics about the Noise Variance Compliance Tracking and Reporting. This section describes the process and requirements for the INM. The INM shall remain on-call during all periods of scheduled night work. Noise-related complaints received by WSDOT's 24-hour construction hotline will be forwarded to the INM during nighttime work hours. If the INM receives a complaint call during nighttime work hours, the INM will notify the contractor, perform a site inspection within 60 minutes of receiving the complaint, conduct short-term noise measurements (minimum 15 minutes per location) while on-site to confirm an exceedance of the MPPCNV sound-level limits is occurring, and investigate potential work modifications to resolve the complaint.

To establish alternative nighttime construction noise limits to be applied to the project, WSDOT measured ambient sound levels at potentially affected sensitive receivers in the project vicinity. The monitoring methodology follows industry accepted practices. Continuous monitoring and recording of sound levels ranging in duration from 6 to 8 days was conducted at six sites. Measurements were taken during March and April 2019. Sound levels measured during the late-night hours (12:00 a.m. to 5:00 a.m.) provide the most conservative representation of the existing baseline condition. Noise measurement sites were selected based on their proximity to construction activities, with no obstructions between the monitoring location and the construction work area.

The measured existing nighttime sound levels at all monitoring locations exceed the City of Seattle nighttime noise control ordinance limits of 45 dBA (Leq) for residentially zoned receivers.

*h.* For economic variances, whether the proposed sound source predates the receiver(s).

Not applicable.

### EXHIBIT 1



### IV. Conclusions

- I. Construction noise is allowed to exceed the base noise limits under the Noise Code (SMC 25.08.425). On public projects, construction noise is allowed to exceed the noise limits by between 15 and 25 dBA, depending on the type of equipment being used, between 7:00a.m. and 10:00 p.m., and 9:00 a.m. to 10:00 p.m. on weekends and

holidays. Impact work that exceeds the noise limits is more restricted and is allowed only between 8:00 a.m. and 5:00p.m. on weekdays and between 9:00a.m. and 5:00p.m. on weekends and holidays. WSDOT requests to work outside those hours.

2. The Noise Code allows relief from the limits described above if a variance is approved by the Administrator. The criteria for variance relief, found in SMC 25.08.590 and 25.08.655 are analyzed in Section III above.
3. The proposal to obtain a variance from the construction noise limits of the Noise Code complies with the variance criteria, as conditioned.
4. The Noise Management and Mitigation Plan proposed by WSDOT complies with SMC 25.08.590.

#### V. Decision

The Noise Variance is granted for 3 years starting at the beginning of nighttime construction, subject to the following conditions and to all requirements, specifications, standards, limits, and mitigation measures identified by WSDOT in its application.

#### VI. Conditions

1. WSDOT, the primary contractor, and all subcontractors shall follow and execute all noise control measures identified in the Noise Variance application, NMMP, and this Analysis and Decision. If there is a conflict between the application or proposed NMMP and this Analysis and Decision, the requirements of this Analysis and Decision control.
2. Nighttime project sound levels shall not exceed the limits at the identified receiving sites for LEQ and L1 listed in Table 2 below. These limits shall apply to all equipment operating during nighttime hours within the projects work area as shown in Exhibit 1 of this decision.

**TABLE2**  
Variance Noise Limits as Conditioned by SDCI

Measure d Site	Representative Residential Receivers - Additional Modeled Only Sites	Measured 12 to 5AM Log Hourly Average Leq (dBA)	<b>SDCI- Conditioned</b> Nighttime Noise Level Hourly Average Limit Leq (dBA)	<b>SDCI- Conditioned</b> Nighttime Noise Level Hourly Average Limit L1 (dBA)
M1	A1 to A3	66	72	82
M2	A4 to A15	68	74	84
M4	A16 to A18	64	70	80
M5	A19 to A21	65	71	81
M6	A22	60	66	76

3. Violating any condition imposed by this Analysis and Decision shall result in a review of the violation and may result in SDCI staff modifying the condition or revoking this Noise Variance as allowed by SMC 25.08.615.
4. SDCI shall provide oversight of the nighttime work to protect the public's interest and monitor the contractor's and subcontractors' compliance with the Noise Code and the conditions imposed by this Decision.
5. The Project coordinators with authority to stop work shall be present on the Project site during all work hours to ensure that mitigation measures are being followed.
6. The INM shall conduct periodic noise monitoring consistent with Director's Rule 3-2009. Specifically, monitoring for this Project shall occur as described in the June 23, 2019 Noise Variance application.
7. WSDOT shall keep SDCI and the community informed of upcoming nighttime work at least 72 hours before starting nighttime work. Notice may be in the form of email lists, mailers, or door-to-door, and all notices given shall include contact information to enable residents, visitors, and businesses to contact the Contractor and WSDOT's project team.
8. Fourteen days before starting nighttime construction that is subject to this Noise Variance, WSDOT shall provide a one-time notice of the start date to the Administrator and to all community members who were notified of the Noise Variance application. The notification form and content shall be approved by the Administrator.
9. WSDOT shall require the contractor and all subcontractors to use equipment and trucks in a manner that minimizes the sound that is generated. Specific measures are identified in the application as "Required Minimum Mitigation Measures" and "Additional Noise-Control Measures."
10. Required Minimum Mitigation measures shall include:
  - The contractor shall use broadband or strobe backup warning devices or use backup observers in lieu of backup warning devices for all equipment, in compliance with Washington Administration Code, Sections 296-155-610 and 296-155-615;
  - Except as described below, there will be no impact work, such as auger shaking, jack hammering and impact pile driving, during the nighttime hours from 10 p.m. to 7 a.m. on weekdays and 10 p.m. to 9 a.m. on weekends and legal holidays. Nighttime impact work will be conducted within the noise level limits established in the variance or will be regulated to day work only. Temporary Noise Variances (TNV) will not be approved to supplement any impact activities;
    - There will be impact work for creating access and workspace. These activities are expected to occur on up to 25 non-consecutive nights at the 10th Avenue Abutment, 5 non-consecutive at the Mercer ramp and 15 non-consecutive nights in the I-5 express lanes. This work was modeled and shown in Exhibit 12 of the application.

- There will be impact work for demolishing the existing retaining wall at the westbound SR 520 northbound I-5 on ramps. This work is expected to occur on 72 non-consecutive nights. This work was modeled and shown in Exhibit 15 of the application.
- Additional notifications will be sent to residences within 300 feet of any nighttime impact work. Notices will be sent with a minimum 72 hours before the start of nighttime impact work.
- The contractor shall securely fasten truck tailgates;
- The contractor shall use sand, rubber or plastic lined truck beds for all haul trucks to reduce noise, unless an exception is approved by WSDOT';
- The contractor shall not use compression brakes;
- The contractor shall not leave equipment to idle for longer than five minutes;
- The contractor shall use temporary noise mitigation shields, enclose, or use low noise-generating stationary equipment, such as light plants, generators, pumps, and air compressors near residences where practical;
- The contractor shall equip nighttime surface equipment with high-grade engine-exhaust silencers and engine-casing sound insulation;
- The contractor shall use electric welders powered from utility main lines instead of gas, diesel, or internal combustion generators/welders;
- The contractor shall use critical or double mufflers where practicable on machinery for off-road use, such as cranes;
- The contractor shall use noise blankets, skirts, or other available means for mobile equipment to mitigate noise that does not unreasonably interfere with the operation of the engine; and
- The contractor shall use temporary mobile noise barriers in the immediate vicinity of loud activities nearby residences.

11. Additional Noise-Control Measures to be employed by WSDOT as needed:

- Providing earplugs and white noise machines to residents near the project area;
- Installing temporary sound dampening drapes for residents; and
- Providing hotel rooms for residents during high impact or extremely noisy operations.
- At least 7 calendar days before any impact work, WSDOT will identify where the following measures are needed and offer the measures to affected properties. WSDOT shall notify SDCI of the offer.

12. All monitoring locations used as baseline measurement locations, except location M3, shall be equipped with permanent monitoring devices. If WSDOT is unable to obtain rights of entry to any of these locations, it shall coordinate with SDCI to develop substitute locations for which it can obtain rights of entry. Substitute locations shall be reasonably close to the locations that would be replaced. A mobile monitor will be placed at the nearest residence to active nighttime construction.

13. The independence of the INM shall be established by WSDOT and approved by SDCI before starting nighttime construction under the variance.



14. WSDOT shall provide a staffed complaint hotline phone number and shall respond to all noise complaints within 60 minutes. Response shall be directly to the complaint caller and to SDCI Noise at 206-615-1190.
15. The Contractor shall be required to submit a revised NMMP for SDCI's approval before starting nighttime work.
16. WSDOT, its contractor, and subcontractors shall be responsible for implementing and adhering to all NMMPs. WSDOT's contractor shall submit their NMMP to SDCI for review and approval.
17. Under SMC 25.08.655.D, the Administrator shall conduct a one-year review and may modify the terms and conditions of the Noise Variance, Decision, or NMMP if it is determined that the terms or conditions of the Noise Variance, Decision, or NMMP are not adequately protecting public health and safety or reasonably controlling or mitigating the construction noise, or that more reasonable methods of mitigating the construction noise should be implemented.
18. After the one-year review provided for in SMC 25.08.655.D, subsequent annual evaluations shall be performed of the track record on noise compliance and effectiveness of construction noise mitigating conditions in place. If necessary, new or modified conditions may be imposed to improve compliance results.
19. WSDOT, its contractor, and subcontractors are responsible for all equipment used on site whether being used by the contractor or sub-contractor. If noise barriers are used to mitigate sound, the contractor or subcontractor is responsible for providing the barriers.

Dated the 12<sup>th</sup> day of November 2019.

Nathan Torgelson  
Director, City of Seattle Department of Construction and Inspections  
Administrator, Chapter 25.08 SMC

### **APPEAL INFORMATION**

Any person aggrieved by the denial, approval, or the terms and conditions imposed by this Decision may appeal this Decision to the City of Seattle Hearing Examiner according to SMC 25.08.610. Appeals must be accompanied by a check for \$85 made payable to the City of Seattle.