

**Section 2: Additional Information for the
Community Noise Variance Application
Interstate Route H-1, Guardrail and Shoulder Improvements, Kapiolani
Interchange to Ainakoa Avenue**

Item 2

Type and Purpose of Activity.

The Federal Highway Administration (FHWA) and the State of Hawaii, Department of Transportation (HDOT), plans to construct the Interstate Route H-1, Guardrail and Shoulder Improvements, Kapiolani Interchange to Ainakoa Avenue Project, to upgrade and improve guardrail and shoulder facilities along the Interstate Route H-1 (H-1) located between the Kapiolani Interchange and Ainakoa Avenue, between Milepost nos. 25 and 27. The proposed upgrades and improvements will bring sections of the H-1 into compliance with current design standards mandated by the Federal Highway Administration set forth by the National Cooperative Highway Research Program, Report 350. See **Section 4, Drawings, Figure 1: Noise Variance Notification Area**, depicting the overall project limits and the location of the subject area for this Community Noise Variance request.

All construction activities will be located within the H-1 right-of-way (ROW) corridor, under jurisdiction of HDOT. The project area is comprised of 25 discontinuous sites along the H-1 corridor between Milepost nos. 25 and 27. The sites vary in size and depth with the deepest requiring work approximately 20 feet below ground surface to install a new traffic signal at the Ainakoa Avenue Intersection. See **Section 4 Drawings**, for the overall project limits. Construction along the total project alignment will take about one year to complete and involve the following:

Night Hours Construction Activities

- **Guardrail and Post Installation:** The guardrail along the Waialae Off- and On-Ramps will be upgraded and replaced with new steel thrie beams and strong posts during night hours. The Off-Ramp will be closed to provide a vibratory hammer with enough clearance to install the guardrail posts. Because this will be at night, the potential for impacts to traffic will be significantly minimized.
- **Retrofitting Catch Basins:** The existing catch basin at the Waialae Off-Ramp will not be upgraded or improved. However, the catch basin will be modified with a concrete cap on top of the catch basin to allow for the installation of the guardrail posts. This work will also be done during night hours.
- **Retrofit Retaining Wall:** The retaining wall at the Waialae On-Ramp will need to be strengthened and repaired to allow the guardrail to be extended to close a gap

between the retaining wall and the guardrail. This work will be done during night hours and may require the temporary closure of the Waialae On-Ramp.

Item 3

Location of Night Work.

The project limits for nighttime construction will be restricted to the Waialae On- and Off-Ramp areas and are shown in **Figure 1**. Residential homes will be near to the proposed nighttime construction activities.

Item 4

Time of Activity.

The times of activity requested to be covered by this Community Noise Variance application. Pursuant to HAR Section 11-46-7(j) are:

- Mondays through Fridays: Midnight to 7:00 a.m. and from 6:00 p.m. to Midnight.
- Saturdays: Midnight to 9:00 a.m. and from 6:00 p.m. to Midnight.
- Sundays: Midnight to 9:00 a.m. and from 6:00 p.m. to Midnight.

Construction activities will not be performed during federal and state holidays, and/or during special events.

Item 5

Estimated Duration of Construction Activity.

Construction associated with night work is planned to commence in April 2018 and end in October 2018 for a total project duration of approximately 6 months.

Item 6

Schedule of Activity.

Proposed Construction Schedule*			
Work Activity	Duration	Work Period	
		Start Date	End Date
1. Mobilize site and install temporary BMPs and erosion control measures.	7 days	04/02/2018	04/09/2018
2. Guardrail and posts installation, Retrofit Catch Basin and Retaining Wall at the Waialae Off-Ramp.	4 months	04/02/2018	07/31/2018
3. Guardrail and posts installation and Retrofit Retaining Wall at the Waialae On-Ramp.	2 months	08/01/2018	10/01/2018
4. Remove temporary BMPs and erosion control measures and demobilize site.	7 days	09/24/2018	10/01/2018
Expected Total Project Duration	6 months		10/01/2018

***Note: Start and end dates of construction activities may be modified by the project contractor.**

See also **Item 2, Type and Purpose of Activity.**

Item 7

Description of Immediate Impact Area.

The immediate area surrounding the nighttime construction area (within a 500-foot radius) is residential. The Waialae On and Off Ramps are heavily used by residents of the area and patrons to businesses in Kahala. See **Section 4, Drawings, Figure 2: Properties Affected by Noise Variance Hours.**

Item 8

List of Equipment to be Utilized.

The following equipment is expected to be used during night hours work activities:

Equipment Type	Sound Levels - Decibels (dBA) at 50 Ft. (Max)
Vibratory Hammer	93 dBA
Concrete Truck	79 dBA
Generator	81 dBA
Chipping Gun	79 dBA
Pick Up Truck	75 dBA
Large Power Drill	60 dBA
Backhoe	80 dBA

Source: (1) Poecker, R. and Sposito, B. 1999. Guardrail Installation Noise Level Evaluation Final Report, State Planning and Research Program Project 315. Oregon Department of Transportation Research Group and Federal Highway Administration. Report Number FHWA-OR-RD-99-23. (2) 2006. FHWA Highway Construction Noise Handbook Final Report. U.S. Department of Transportation Research and Innovation Technology Administration and U.S. Department of Transportation Federal Highway Administration. Report Number FHWA-HEP-06-015.

Item 9

Plans and Procedures for the Attenuation of Noise Emission Emanating from the Activity.

Attenuation of noise associated with construction will be accomplished by the following:

1. The applicant shall have a job-site inspector to whom immediate complaints can be forwarded for a prompt response and who shall have the general responsibility of monitoring the noise levels of work procedures. The job-site inspector's 24-hour mobile phone number shall be provided to the DOH and residents surrounding the work area within a 500-foot radius not less than 30-days prior to the start of construction involving night work.
2. Unless authorized by the HDOT, noise levels produced by the project shall not exceed 85 dBA for more than 10 percent of the time at a 100-foot distance from 6:00 p.m. to 10:00 p.m. each day, and will not exceed 75 dBA at a 100-foot distance for more than 10 percent of the time between 10:00 p.m. and 6:00 a.m. each night.
3. The vibratory hammer and chipping gun will not be used between 10:00 p.m. and 7:00 a.m. each night.
4. If required due to the presence of nearby residences, a noise barrier(s) to reduce the generation of noise from operating equipment shall be used. The noise barrier(s) may include, but not be limited to the use of sheet steel plates, or other acoustic barrier to reduce the impact of noise.

5. The contractor will be required to maintain all equipment in good working order. In addition, all equipment with an exhaust of gas or air will be equipped with mufflers.
6. Any equipment found to be in poor condition or not in compliance with applicable regulations of the State of Hawai'i and City and County of Honolulu shall be corrected prior to use or shall be removed from the job site.
7. Construction equipment with exposed engine compartments will not be allowed on the job site.
8. Backup safety alarms will not be used. The use of flagmen, hand-signals, radio communication, or "white-noise" backup signals will be employed in place of backup alarms.
9. The general contractor or his authorized assigned representative will monitor all equipment and construction activities on the job site to ensure the use of noise attenuation or abatement measures. The contractor will immediately correct any deficiencies or Community Noise Variance violations that occur.
10. Instructional meetings will be conducted for construction crews and truck drivers to discuss noise attenuation or abatement procedures, including procedures for loading and unloading cargo, use of engine brakes, disabling reverse alarms, voice control, use of signal callers, and other noise attenuation practices as required.
11. The contractor will be required to use a special low-noise type of generator at the project site for any work conducted under this Community Noise Variance.
12. Additional mitigation measures may be implemented if construction noise exceeds permitted levels or in response to noise complaints. These could include rescheduling specific work activities to other less noise-sensitive times of the night or installing temporary noise abatement measures at the affected receptor locations.

Item 10

Identify Specific Provisions of Statutes or Rules for which the Variance is Requested.

This variance is requested from the night hours prohibitions of excessive noise from construction activities as contained in Hawai'i Administrative Rules (HAR), Chapter 11-46. The specific paragraphs of the rules for which this variance is requested are in HAR Sections 11-46-7(j)(1), 11-46-7(j)(2), 11-46-7(j)(3).

- (j) *Specific permit restrictions for construction activities.*
 - (1) *No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels for the hours before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday;*

- (2) *No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels for the hours before 9:00 a.m. and after 6:00 p.m. on Saturday; and*
- (3) *No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays.*

As cited, the purpose of this request is to allow completion of the project in a timely manner by allowing work to occur during night hours. Without this provision, the project would extend the period of time for construction resulting in inconvenience and traffic delays to the public.

Item 11

Description of Alternatives to the Proposed Activity.

NO ACTION

The no-action alternative would involve making no effort to upgrade or improve the guardrails and shoulders at the Waialae On and Off Ramps. The no-action alternative would avoid the requirement for night work which would avoid the generation of noise and potential traffic inconvenience to residents.

Under this alternative, project costs, environmental impacts, and public inconvenience resulting from nighttime work activities would be avoided, but the existing features at the Waialae On and Off Ramps would remain as-is with no upgrades or improvements. The result would be a slow but continued diminishment of the use of safety standards designed to protect the motoring public along this segment of the H-1 corridor. Over time, this would compromise motorist safety as guardrails and shoulder improvements designed to prevent or lessen the effects of motor vehicle accidents would decrease. The state would also fail to comply with the National Cooperative Highway Research Program (NCHRP) Report 350 that recommends procedures for safety performance evaluation of highway facilities to be upgraded and improved to meet current design standards.

Because taking no-action would fail to meet the project's purpose and need, and would result in further potential for harm to motorists and the community, it is removed from further consideration.

DELAYED ACTION

The delayed action alternative would postpone improvements to the guardrail and shoulder features at the Waialae On and Off Ramps, to an unspecified future date. Under this alternative, environmental impacts resulting from work activities would be delayed, but are anticipated to be generally the same as with the preferred alternative for the project. However, required guardrail and shoulder improvements would not be completed in the timely manner as prescribed in the NCHRP Report 350 current design standards. It is also reasonable to expect that labor and material costs required for

construction will increase over time, resulting in ultimately higher project costs if the action is delayed. The delayed action alternative would also fail to address in a timely manner the need for improved highway safety features, thereby increasing the potential for unnecessary risks to motorists. For these reasons, the delayed action alternative is also removed from further consideration.

PREFERRED ALTERNATIVE

The preferred alternative would install upgrades and improvements to the guardrails and shoulders at the Waialae On and Off Ramps. New guardrails and retaining wall retrofits will be installed at both the Waialae On and Off Ramps in addition to a crash attenuator at the Off Ramp. This work was elected to be constructed at nighttime to avoid excessive traffic delays from ramp closures during the daytime hours. The vibratory hammer that will be used to install the guardrail posts will occupy the entire space on the ramps and leave no space for vehicular access.

These upgrades and improvements will increase safety for motorists using this section of the H-1 and would comply with the NCHRP Report 350 recommendations for highway design standards in a timely manner. This alternative would further meet the purpose and need of upgrading safety features at the Waialae On and Off Ramps to current design standards. For these reasons, this alternative was selected as the preferred project alternative.

Item 12

Describe why the Present or Proposed Activity Cannot be Altered to Comply with Applicable Statutes or Rules.

The proposed activity cannot be altered to comply with HAR, Sections 11-46-7(j)(1), 11-46-7(j)(2), or 11-46-7(j)(3), because any alterations would incur a greater burden on tax payers, lengthen the duration of construction activities, and could result in additional adverse impacts associated with construction associated nuisance (e.g., a longer period of noise and traffic delays associated with closure of lanes).

Present construction equipment cannot be expected to emit noise levels below 45 dBA at a 50-foot distance, which is the night hours DOH noise limit for residential uses along the project corridor. Typical diesel-powered equipment and trucks will exceed this limit by 25 to 35 dBA. Specification and selection of the quietest available equipment which can perform the work could still result in exceedances of 15 to 25 dBA. Quieting of construction equipment by the 20 to 30 dBA required to comply with HAR, Chapter 11-46, is beyond the present state-of-the-art. This is supported by published literature on construction equipment noise levels, and the ongoing need to implement permit procedures for construction activities.

Item 13

Description of Any Adverse Environmental Effects which cannot be Avoided.

Night hours construction noise will be apparent to residents in the surrounding residential communities near the H-1 until 10:00 p.m.; however the severity of noise perception by such persons will vary by time, distance, and the nature of construction activity at a particular moment. During the early morning hours between midnight and 5:00 AM, when traffic and background ambient noise levels are relatively low, the risk of adverse noise impacts is higher. Because early morning background ambient noise levels in particular are too low to mask construction noise, it is necessary to schedule activities, such as saw cutting or the majority of impact generating noise, during hours of more general activity, whether day or evening. In any event, the Contractor will be responsible for controlling the noise emissions during the variance period.

Activities that produce high levels of noise, such as jack hammering and the majority of demolition work, etc., will be performed during daylight hours. To the extent possible, work tasks will be split into phases, with noisier activities performed during daytime hours, and quieter activities performed during the evening, late night, and/or early morning hours.

The requested variance for work during night, early morning, and weekend hours may constitute a nuisance to residents near the planned area of work due to the expectation of low noise levels during non-business or leisure hours. However, by scheduling the work with the highest noise levels during the daylight hours, the risk of adverse health effects due to sleep disturbance will be minimized. Interruption of other evening household activities such as conversing, TV viewing, or telephone communications may occur at some of the closer residential units. Use of the normally permitted Saturday work period can take precedence over night work periods. If the noise levels are considered to be unacceptable, rescheduling specific work activities to less noise-sensitive times of the evening or employing temporary noise abatement measures at the affected receptor locations are other possible mitigation measures that can be considered.

Item 14

Discuss the Relationship Between Short-Term (Temporary) use of the Environment, and the Maintenance and Enhancement of Long-Term Productivity.

Noise emissions associated with this project will be temporary and are expected to conclude after a total project period of no more than six months. Nighttime construction at any one receptor location will primarily be the result of the installation of guard rails posts at the Waialae Off-Ramp and On-Ramp and retaining wall and catch basin retrofits. This work is recommended to be constructed during night hours due to the closure of the Waialae On- and Off-Ramps for work that is required using a guardrail post vibratory hammer. Other construction activities will only be conducted on an incidental basis during the night. Higher noise emissions are scheduled to occur during

the normally permitted daytime hours rather than during the late night or early morning hours. The project is necessary to upgrade guardrail and shoulder features and will improve motorist safety along the H-1 corridor.

Item 15

Discuss any Irreversible and Irretrievable Commitments of Resources which would be Involved in the Proposed Activity.

The proposed activity will not require the additional commitment of resources other than the use of an electrical generator or the use of fossil fuels for night hours lighting and equipment, or the possible increased use of air conditioning at night by nearby residents.

Item 16

Discuss Any Possible Impact from Noise Created by Any Proposed Night Hours Activity which May Affect the Immediate Surroundings.

The proposed night hours activities will result in noise impacts to residents near the project area during the evening and early morning. Intermittent interruption of evening household activities such as conversing, television viewing, or telephone communications may occur at some of the closer residences. Adverse health effects over the long term due to sleep disturbance is not expected as the duration of proposed night hours work activities will be temporary and of limited duration. Further, although the indicated period of construction will be approximately 6 months, this timeframe is expected to be reduced as progress to install the guardrail posts are based on difficult soil conditions which may not be present throughout the area of work.

Item 17

Discuss Any Plans or Procedures for Notification.

Nearby residences, lessees and land owners located within 500 feet of the project will be given advance notice regarding project plans via a mailed notice by the Applicant.

In addition, a public information meeting on the requested variance will be held prior to the end of the 30-day notification period for granting this variance. A legal notice of the meeting and variance application will be published in the Honolulu Star Advertiser for one (1) day. See **Section 2, Attachment 1, Public Notification Documents**. Notices will also be mailed prior to the start of construction activities.

As indicated in Item 9, above, the applicant shall also provide the mobile number for the project's job-site inspector to whom immediate complaints can be forwarded on a 24-hour basis. The job-site inspector's 24-hour mobile phone number shall be provided to the DOH and residents surrounding the work area within a 500-foot radius not less than 30-days prior to the start of construction involving night work.

Item 18

Describe the Purpose of the Project as Relating to Public Interest.

This proposed project will benefit the public as it will address the need for motorist safety improvements while travelling along the H-1 corridor between the Kapiolani Interchange to Ainakoa Avenue. The method of repair serves the public interest by minimizing the duration of project activities, construction impacts, and tax payer costs. Routine maintenance and repair activities to critical infrastructure, such as this project, will minimize the potential for adverse impacts to public safety.