

# SM 101 EXPRESS LANES PROJECT NOISE ANALYSIS FACT SHEET



July 2019

As part of the SM 101 Express Lanes Project (previously the SM 101 Managed Lanes Project), the California Department of Transportation (Caltrans) will relocate three sections of sound wall in the City of San Mateo, adjacent to northbound US 101. The sound walls will be reconstructed at their existing lengths and heights. The locations where sound walls are being relocated are shown on the maps on page two of this fact sheet.

The City of San Mateo and residents have raised concerns about the potential for increased noise after the existing sound walls are relocated. A careful technical analysis has shown that the project will cause a negligible increase in noise for this area.

This fact sheet presents a summary of the Caltrans noise analysis process and documents the findings. During this process, Caltrans has been in regular contact with the City of San Mateo to provide updates on the project and to address concerns raised by the City Council.

## Project Background

As part of the SM 101 Express Lanes Project, Caltrans has completed both the environmental review process and its review of the noise analysis process undertaken for this project. The Final Environmental Impact Report/Environmental Assessment (EIR/EA), the Noise Study Report, and the Noise Abatement Decision Report are available at the following website:

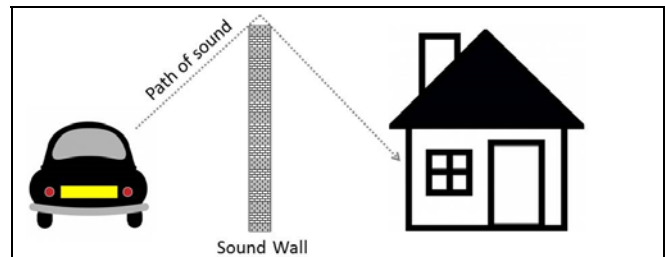
[http://www.smcta.com/about/Documents/SM\\_101\\_Express\\_Lanes\\_Projects\\_Document\\_Library.html](http://www.smcta.com/about/Documents/SM_101_Express_Lanes_Projects_Document_Library.html)

## Sound and Noise

Sound is a vibration of air detected by the ear and interpreted by the brain. Noise is unwanted sound. Human response to both sound and noise is highly subjective; individuals may respond differently to the same type and loudness of sound. The loudness of sound is measured in decibels. In general, a 3 decibel increase in sound is barely noticeable to most people, whereas a 10 decibel increase in sound is perceived as twice as loud.

Freeway sound walls reduce noise by blocking the sound path between the freeway and the people closest to it. As shown in the following figure, by forcing sound to travel over or around the wall, the sound energy is reduced before it reaches a person. The more the sound is forced to bend around the wall before coming into contact with people, the more the sound level is reduced for the person hearing the sound. Sound walls work best for the

people closest to a sound wall, especially for the first row of properties next to the freeway. People further away receive less noise reduction from a sound wall but overall hear less sound due to distance.



The largest contributor to freeway traffic noise comes from automobile tires contacting the pavement. This sound is generated at the ground level. The second largest contributor is engine noise, mostly from larger trucks. This sound is generated between 4 and 6 feet above the ground. A noise wall that is at least 8 feet will generally eliminate the vast majority of the traffic noise.

## Noise Study Conclusions

The project is anticipated to increase noise levels by 0-3 decibels in the City of San Mateo, below a noticeable threshold for most individuals. However, without the existing sound walls, the increase would be more than 10 decibels, a dramatic increase in noise. Given this, all removed sound walls will be reconstructed.

The City has requested that the relocated walls be built higher than the existing walls. Increasing the heights of the sound walls would not result in a noticeable reduction in traffic noise. The three sound walls will be reconstructed at their existing lengths and heights.

## Noise Regulations and Policies

The City of San Mateo raised the issue as to whether the City, or a different entity, could pay the additional cost attributable to the higher sound wall height. This is expressly prohibited under revised Federal regulations.<sup>1</sup> Additionally, as the technical study shows, a higher sound wall will likely not result in a noticeable reduction in noise.

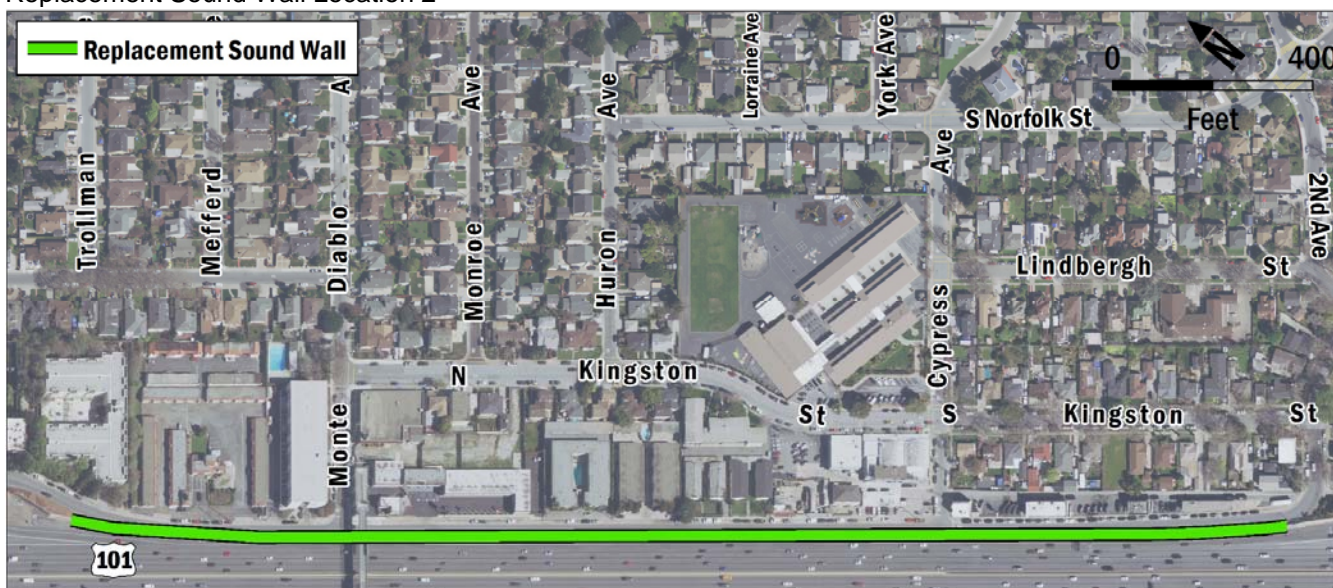
<sup>1</sup> Title 23, Part 772 of the Code of Federal Regulations



Replacement Sound Wall Location 1



Replacement Sound Wall Location 2



Replacement Sound Wall Location 3

