

# Memorandum

<b>Date:</b>	June 24, 2010 (Rev. August 4, 2010)
<b>To:</b>	Aaron Burton, California Department of Transportation
<b>From:</b>	Mike Greene, ICF
<b>Subject:</b>	<b>Mount Vernon Avenue Bridge Project – Changes in Traffic Volumes and Noise</b>

## Project Description

The City of San Bernardino (City), in association with the California Department of Transportation, District 8 (Caltrans), and the Federal Highway Administration (FHWA), proposes to reconstruct the Mount Vernon Avenue Bridge (Caltrans Bridge No. 54C-0066) over the Burlington Northern Santa Fe (BNSF) railroad facility in the City of San Bernardino, County of San Bernardino, State of California. This memorandum has been prepared to address the potential for changes in traffic noise resulting from upward projections in traffic volumes for the referenced project.

### **Background**

The noise analysis conducted for the Environmental Analysis (*Mount Vernon Avenue Bridge Project Environmental Assessment (and Programmatic Section 4(f) Evaluation)*, March 2010) concluded that Existing, Future no Project and Future with Project traffic noise levels would not approach or exceed the applicable Federal Highway Administration (FHWA)/California Department of Transportation (Department) Noise Abatement Criteria (NAC) for noise-sensitive land uses in the project vicinity. Predicted traffic noise levels under the Future with Project scenario were 60 dBA  $L_{eq}$  or lower at representative noise-sensitive receiver locations, which is well below the applicable “approach NAC” noise threshold of 66 dBA  $L_{eq}$ . Therefore, traffic noise impacts were not anticipated to occur as a result of the project, and noise abatement measures were not considered.

At the time of the noise analysis, the future traffic volumes were anticipated to decrease slightly in the future; therefore, existing (Year 2009) traffic volumes were conservatively used for the future noise modeling. Based upon recent revisions to the forecast future (Year 2035) traffic volumes, an increase in peak-hour traffic volumes of slightly less than 10 percent above existing levels is anticipated. Utilizing the following relation (based in the physics of sound and commonly used in the practice of noise analysis) between a sound source and the resultant noise level, the change in noise level resulting from a 10 percent increase in traffic noise was calculated:

$$\text{Change in sound (noise) level [dB]} = 10 * \text{Log} (V2/V1)$$

In which V2 is the “new” traffic volume and V1 is the “old” traffic volume.

In this case,

$$V1 = \text{Year 2009 traffic volume ADT} = 14,667$$

V2 = Year 2035 traffic volume = 16,107

Change in noise level =  $10 \cdot \log (16,107 / 14,667)$  [dB]

Change in noise level =  $10 \cdot \log (1.10)$  [dB]

Change in noise level = 0.41 dB

Thus, a 10 percent increase in traffic volume would be expected to result in a corresponding increase in traffic noise levels of less than 0.5 dB. Such an increase in the traffic noise level would not be an audible change to an average human listener, in a community context (i.e., outside of controlled listening laboratory conditions).

## Conclusions / Recommendations

An anticipated increase in traffic volumes by Year 2035 of 10 percent compared with Year 2009 would result in a small increase (less than 0.5 dB) in traffic noise. Based upon the March 2010 Environmental Analysis in which traffic noise levels under the Future with Project scenario were predicted to be 60 dBA  $L_{eq}$  or lower at representative noise-sensitive receiver locations, Year 2035 traffic noise levels could potentially increase to 61 dBA  $L_{eq}$  or lower, but in any case would remain well below the FHWA/Department NAC “approach or exceed” threshold of 66 dBA  $L_{eq}$ . Therefore, the projected upward revision to traffic volumes in the subject project area would result in a negligible impact in traffic noise levels.

## References

- City of San Bernardino. March 2010. *Mount Vernon Avenue Bridge Project Environmental Assessment (and Programmatic Section 4(f) Evaluation)*. San Bernardino, CA.
- Harris, Cyril M., ed. 1991. *Handbook of Acoustical Measurements and Noise Control*. Third Edition. McGraw-Hill, Inc. New York, NY.
- E-mail: from Greene, Steven B. ([sbg@iteris.com](mailto:sbg@iteris.com)) to Greene, Mike ([mgreene@icfi.com](mailto:mgreene@icfi.com)). June 23, 2010. *Re: Mount Vernon Noise*. Ontario, CA.