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DATE: November 3, 2015

TO: Planning & Environmental Managers

FROM: Rose Waldman, EPB Air Quality & Noise Program Manager

SUBJECT: CDOT Noise Analysis and Abatement Guidelines Update RE: Long-Term Noise Measurements

Background: The *CDOT Noise Analysis and Abatement Guidelines* (Guidelines) was most recently updated on January 15, 2015. Appendix C of the Guidelines, titled *Traffic Noise Model User's Guide for CDOT Projects* (User's Guide), was initially written in July 2004 and finalized in November 2006. It was developed soon after CDOT began transitioning from using the STAMINA model to the Traffic Noise Model (TNM). Although Version 1.0 of TNM was released in March 1998, many states were still transitioning between models until 2005. CDOT began using TNM in 2005, when STAMINA was no longer allowed by Federal regulation. However, projects that had already been started in STAMINA prior to 2005 were allowed to continue use of that program. The current version of TNM is 2.5, which is presently being upgraded to Version 3.0.

Rationale for Update: As required under Policy Directive 1900.0, *Noise Mitigation Policy*, CDOT reviews the Guidelines every three to five years in order to amend it for outstanding technical concerns and practical applications, and continually improves it as necessary and appropriate. After TNM is upgraded to Version 3.0, CDOT will revise the Guidelines, including the User's Guide. However, it has come to our attention that a specific aspect of the User's Guide was ambiguous and needs to be clarified: noise model validation and validation measurements.

Section 4.0 of the User's Guide discusses noise model validation using TNM. There is a discrepancy between what is considered a long-term measurement in two areas of the User's Guide. Near the top of page 26, long-term measurements are described as 24-hour measurements, while near the bottom of the same page it indicates that long-term measurements are 3 to 4 days.

Update: The following three paragraphs are from page 26 of the User's Guide. The third paragraph is being replaced with two paragraphs. Proposed revisions are noted in **red and/or strikeout mode**:

2. *Validate Model Using Short-Term Noise Measurements Compare TNM predicted noise levels to short-term (i.e. one hour) measurement results. Conduct **short-term** measurements and predictions as described below. This is applicable to medium-sized projects such as interchange improvements and small corridors, **as well as large corridor projects which do not have substantial public controversy regarding the noise analysis.***

3. *Validate Model Using Short-Term And Long-Term Noise Measurements: Compare TNM predicted noise levels to short-term (e.g., one hour) measurement results, and long-term (e.g., 24-hour)*

measurement results. Conduct measurements and predictions as described below. This is applicable to ~~large corridor~~ projects which have uncertainty when the loudest-hour is, substantial public controversy regarding the noise analysis, and projects where significant mitigation is likely.

~~Long-Term Measurements: Long-term measurements provide a clear understanding of the loudest-hour noise level that repeats from day to day. Therefore, 3 to 4 days of data is required at a minimum, and one week of data is desired. Measurements should be conducted in 15-minute or one-hour intervals. This type of information may be required only for large corridor projects.~~

Long-Term Measurements: The purpose of long-term measurements is to understand the loudest-hour noise level. The period with the highest sound levels may not be at the peak traffic hour but instead, during some period when traffic volumes are lower but the truck mix or vehicle speeds are higher. The loudest-hour correlates to a traffic volume that is incorporated into the traffic noise model for the loudest traffic condition.

Twenty-four hour noise measurement are used to determine the loudest traffic hour. The measurement should yield the worst hourly highway traffic noise level generated from representative noise sources for that area. Measurements should be conducted in 15-minute or one-hour intervals.

Individuals/Entities Impacted by Procedural Directive: This memo applies to all divisions, Regions, offices and branches of CDOT. It also applies to consulting firms performing contracted work for CDOT as well as Local Agencies and quasi-governmental entities performing work under CDOT's authority. It applies to any highway or multimodal project that:

- (a) Requires FHWA approval regardless of funding sources, pursuant to 23 CFR 772.7; and/or
- (b) Is funded with federal-aid highway funds, per 23 CFR 772.7; and/or
- (c) Is a noise mitigation measure pursuant to CRS § 43-2-400, et seq.

Effective Date: Immediate

Please distribute this information to the appropriate individuals and offices in your Region. If there are questions or concerns regarding the guidance update, please contact me at (303) 757-9016 or rose.waldman@state.co.us.